ENTOMOLOGICAL
SOCIETY OF
BRITISH COLUMBIA

Quarterly Bulletins

of the

Entomological Society

of

British Columbia

(Incorporated)

NUMBERS 1 to 10

MARCH, 1906, to JUNE, 1908.

Reprinted August, 1926.

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NOTE

The following Bulletins are the original publications of this Society.

As very few complete sets are known, it was deemed advisable to have them reprinted, as they contain much valuable matter in the way of lists of captures, and throw interesting light on the work of the early Entomologists in British Columbia.

The originals of these Bulletins were kindly lent for reprinting by Mr. E. P. Venables.

BULLETIN

— OF THE —

British Columbia Entomological Society

QUARTERLY MARCH, 1906 No. 1

TO OUR MEMBERS

Ever since our Society was formed, we have laboured under a difficulty which has severely handicapped our work, namely the distance which separates individual members. Except in Vancouver, where we have about eight members, it is impossible to hold meetings for want of a quorum. Nor are all our members endowed with means or leisure enough to enable them to attend meetings at a distance.

Attempts have been made to meet this difficulty by sending round MS. notes, but here the neglect of one member has often thrown the whole system out of gear.

Last December the Secretary approached the Provincial Department of Agriculture to obtain aid in printing a regular Bulletin of our proceedings and work. This assistance has been promised for one year, and it rests with us to prove to the Department the value of our work.

The Bulletin will be published quarterly in March, June, September and December, and a copy will be sent to each member, and to those friends in Eastern Canada and elsewhere who have taken an interest in our doings.

We do not propose to publish any original descriptions, but contributions will be welcomed on classification, distribution, noxious and beneficial insects, breeding, setting methods, and so on. We shall be very largely dependent for copy on the hearty co-operation of every individual member who does anything more than amass a number of un-named specimens—who takes pains to have his material determined by competent authority, even if he has no time or inclination to go deeper into the study. We venture, therefore, to give a few hints as to the way in which this Bulletin may be made most helpful and the general work of the Society more valuable.

1. Collect in several orders, but specialize in one at a time. Let the other members know—through the Bulletin—what you want and what you have to offer.

2. In your special order, send small boxes of un-named specimens to expert authorities. Do not hold on to unknown uniques; a name without an insect is often better than an insect without a name. Do not grudge the expert the few specimens he may retain for his trouble. Send the amount of return postage with the box. If an interesting letter comes back with the insects, let us have extracts at least, so that all may benefit.

3. In orders not specially studied, pick up what comes your way, but label with as much care as the others. Send boxes now and then to a member who may be specially studying that order. In exchanges, make it a rule always to send back rather more than you receive.

4. Keep records of interesting captures, and make lists of all captures in new localities. Try to breed insects known to be uncommon, and keep notes of everything.

OUR WORK.

For the last four or five years our Society has been steadily working at that order which generally attracts the first attention of the collector, the Lepidoptera. In 1898 the B. C. list in this order comprised 90 butterflies and 70 moths. The list now being printed under the auspices of the Society will show that we have not been idle.

But although there is no finality about such a list—for new species are constantly turning up—yet some of us are giving our attention to other orders, in which no regular lists have as yet been published.

For the benefit of those who are studying these other orders, it may be useful to give a brief summary of the work that has been done already, either by our own members or by other entomologists.

Coleoptera—No list has been published in any way pretending to represent the result of our joint researches. The following papers relate in part, or wholly, to our fauna:

Coleoptera of Canada, by Dr. Wickham, Canadian Entomologist, 1894 to 1899.

Coleoptera of the Queen Charlotte Islands, by Rev. J. H. Keen, Can. Ent., 1895.

Coleoptera of Metlakatla and district, by Rev. J. H. Keen, Can. Ent., 1905.

Some Canadian Longicorns, by W. H. Harrington, in Can. Ent., 1899.

Among ourselves our president has collected for some years, and Mr. Hanham has studied the order in Victoria and neighborhood. Mr. Venables has added a large number of names from the Vernon district. The Secretary has a provisional list of some 800 species, compiled from all sources. If we cannot publish this as a whole, we intend to give, in this paper, lists of separate families with all known localities.

Hymenoptera—Matters in this order are in much the same condition, the order having until recently received very little attention. Several papers have appeared from time to time in the Canadian Entomologist.

Hymenoptera of Vancouver Island, by Rev. G. W. Taylor, Can. Ent.

Parasitic, &c., Hymenoptera of B. C., by W. H. Harrington, Can. Ent., 1898.

Bees of Oregon, Washington and B. C., by H. L. Viereck, Can. Ent., 1904-1905.

Mr. E. P. Venables has again a good number of names to his credit from Vernon. The Secretary's list contains about 350-400 names, but he hopes to augment this number soon by the help of Dr. Ashmead, who has kindly undertaken to name a lot of Hymenoptera.

Diptera—Until the last two years nothing had been done, but a visit from Professor Osburn of New York incited some of our members to study this interesting but much neglected order. In Prof. Osburn, Prof. Hine of Ohio, and Prof. Coquillett of Washington, we have found energetic and generous helpers, and our list now musters about 230 species, of which 80 are Syrphidae. Most of these appears in two papers by Professors Hine and Osburn in the Can. Ent., 1904. Mr. Venables is collecting at Vernon, and Messrs. Sherman and Harvey at Vancouver.

The remaining orders are almost untouched, but Mr. Taylor has compiled a very respectable list of B. C. Hemiptera, especially the family Pentatomidae. Mr. Nathan Banks, Professor Ball, and Professor Van Duzee have given us valuable assistance in various orders. Dr. Fletcher of Ottawa has ever been our guide, philosopher and friend, and our debt to him is great. Of our other helpers we must not fail to mention Dr. Dyar, Dr. J. B. Smith, Dr. Skinner, Dr. Barnes and Mr. W. D. Kearfoot in Lepidoptera; Dr. Wickham and Messrs. Schwarz and Harris in Coleoptera; Dr. Ashmead, Mr. Harrington and Mr. Viereck in Hymenoptera.

We append a few references to papers on various orders bearing upon our fauna:

Orthoptera—Thirteen B. C. species; Ent. News, Feb., 1904; A. N. Caudell.

Asemoplus, new species from Sandon; Can. Ent. XXX., 197; E. M. Walker.

Stenopelmatidae; 6 species from B. C. Can. Ent. XXXI., 113; S. H. Scudder.

Trimerotropis; 3 species from B. C. Can. Ent. XXXIV., 3; E. M. Walker.

Twenty-seven species from B. C. Can. Ent. Feb., 1906, XX., E. M. Walker.

Homoptera—Three new Bythoscopidae from Vanc. Isd; Can. Ent. XXXIV., 303.

Odonata—Forty B. C. species; Ent. News, June, 1905. R. C. Osburn.

We might add, for the benefit of non-members, that our annual subscription is one dollar; junior members fifty cents. This carries with it full membership in the Entomological Society of Ontario (of which we are an affiliated branch), and the right to receive the Canadian Entomologist (monthly), the B. C. Bulletin (quarterly), and the Report of the Ontario Society (annually), besides occasional publications.

Active workers in any order will be welcomed to our ranks, and every effort will be made to help and encourage beginners.

LIST OF OUR MEMBERS.

PRESIDENT—Rev. G. W. Taylor, Wellington:—Lepidoptera (Geometridae); Coleoptera, Hemiptera.

VICE-PRESIDENT—T. Wilson, corner Spruce and Ninth Avenue, Vancouver, Injurious Insects.

SECRETARY—R. V. Harvey, Queen's School, Vancouver; Lepidoptera; Diptera and other orders.

J. R. Anderson, Deputy Minister of Agriculture, Victoria.
E. M. Anderson, Asst. Curator, Provincial Museum, Victoria;—Lepidoptera.
A. H. Bush, Spruce and Ninth Avenue, Vancouver.—Lepidoptera.

Theo. Bryant, Vancouver.—Lepidoptera (Tineoidea).
J. W. Cockle, Kaslo Hotel, Kaslo.—Lepidoptera.
W. A. Dashwood-Jones, Tax Collector's Office, New Westminster.—Lepidoptera.
R. Draper, Mount Pleasant P. O., Vancouver.—Lepidoptera.
W. H. Danby, P. O. Box 812, Rossland.—Lepidoptera.
Rev. G. H. Findlay, Fort Steele.
A. W. Hanham, Bank of B. N. A., Duncans.—Lepidoptera, Coleoptera.
F. Foster, 1359 Davie St., Vancouver.—Coleoptera.
C. Livingston, Duncans.—Lepidoptera, &c.
B. Marrion, 229 Twelfth Avenue, Vancouver.—Lepidoptera.
E. Baynes-Reed, Meteorological Office, Victoria.
R. S. Sherman, 2285 Sixth Avenue, Vancouver.—Lepidoptera, Diptera, &c.
E. M. Skinner, Duncans.—Lepidoptera.
Jas. Towler, 273 Dufferin Street, Vancouver.—Lepidoptera.
E. P. Venables, Vernon—Lepidoptera, Coleoptera, Hymenoptera.

ENTOMOLOGICAL SUPPLIES.

The Secretary has on hand a stock of supplies, which will be sold to members at cost price, plus postage.

Cork—3-16 in. thick; per square foot	20c and 30c
Pins—Black japanned Klaeger; sizes 3, 2, 1, per 500	40c
Sizes 0 and 00	60c
Black Minutien, per package of 500	75c
Labels—Stock, per 1000	25c
Locality, any name to order, per 1000	25c
(In stock, Vancouver, Wellington, Goldstream).	
Cyanide tubes, flat base, 5 by 1 inches, uncharged, each	10c
charged, each	15c
Boxes—Double folding, 16 by 12, papered and corked	$2.35
corked, only	2.25
Glass top, 19 by 16, corked and papered	2.35

THE ANNUAL MEETING

The fifth Annual Meeting was held at the Queen's School, Vancouver, on Friday, January 26th, 1906. Eight members present.

Messrs. J. R. Anderson, of Victoria, and F. Foster, of Vancouver, were elected members of the Society.

Mr. Harvey's proposal concerning the printing of a Bulletin of the Society's work and proceedings was discussed and approved; a committee was appointed, consisting of the President and Secretary, to arrange for its publication.

Mr. Dashwood-Jones showed some very interesting Lepidoptera which he had received from Arrow and Kootenay Lakes. Among them was a specimen of a dark ocellated **Coenonympha** resembling **ignorata Edw.** Dr. Skinner considers this as a variety of the European **C. tiphon.** No specimen of **C. ampelos** has as yet been found in B. C. with any trace of ocelli.

Messrs. Marrion and Draper also showed some Lepidoptera, the latter having a fine series of Lepisesia ulalume Streck.

THE BRITISH COLUMBIA LIST

Coleoptera. Family Coccinellidae.

These are the well-known "lady-birds," or "lady-bugs"; red or yellow with black spots, or black with red spots; more or less hemispherical in shape. They are of the greatest economic importance, the larvae being the best natural enemy of scale insects and plant-lice. The larvae and pupae are often brightly colored like the adults. At least eight of our species are found also in Eastern Canada. The numbers refer to Henshaw's List.

Hippodamia Muls.

3041 **5-signata Kby.** Mt. Cheam, Vernon, Kamloops? Shawnigan?
3042 **ambigua Lec.**
3043 **lecontei Muls.** Wellington. var; a moesta Lec. Victoria, Goldstream, Wellington, Vancouver.
3046 **convergens Guer.** Vernon.
3047 **spuria Lec.** Wellington, Duncans, Vancouver, Vernon.
3049 **sinuata Muls.** Victoria.
3050 **13-punctata Linn.** Victoria, Wellington, Vancouver, Sumas.
3051 **parenthesis Say.** Wellington.

Coccinella, Linn.
3056 **trifasciata Linn.** Victoria, &c., Vancouver, Vernon, Kamloops.
3058 **novemnotata Hbst.** Victoria, &c., Vancouver, Vernon, Queen Charlotte Islands.
3059 **transversoguttata Fab.** Wellington, Vernon; var. b californica Mann. Victoria, Wellington, Vancouver.
3060 **monticola Muls.** Victoria.
3058 **a franciscana Muls.** Victoria.
3061 **prolongata Cr.** Vernon.
3062 **tricuspis Kby?** Vernon.
3063 **annectans Cr.**
3064 **sanguinea Linn.** Victoria, &c., Vancouver, Vernon.
Adalia, Muls.
3066 **frigida Schn.** Wellington.
3067 **bipunctata Linn.** Wellington, Vancouver.
Mysia, Muls.
3074 **hornii Cr.** Victoria, Wellington.
Anatis, Muls.
3075 **15-punctata Oliv.** Victoria.
3076 **rathvoni Lec.** Wellington, Harrison River.
Psyllobora, Muls.
3078a **taedata Lec.** Wellington, Duncans, Vancouver.
Chilocorus, Leach.
3080 **bivulnerus Muls.** Wellington, Vancouver.
Brachyacantha, Chev.
3095a **10-pustulata Melsh.**
Hyperaspis, Chev.
3101 **fimbriata Melsh.**
3102 **lateralis Muls.**
3105 **undulata Say.**
3118 **posticata Lec.** Victoria, Goldstream.
Scymnus, Kug.
3140 **pallens Lec.**
3168 **phelpsii Cr.** Victoria, Goldstream, Wellington.
Coccidula, Kug.
————**occidentalis Horn.** "Vancouver Island and British Columbia" (Wickham).

We intend to publish in an early issue list of the Families—Cicindelidae, Buprestidae, Elateridae and Scarabaeidae.

NEW RECORDS, LEPIDOPTERA.

237 **Basilarchia arthemis Dru.** Halcyon Hot Springs, Kootenay Lake, Aug. 1903. The first well-authenticated record for B. C. (determined by Dr. Fletcher for Mr. Dashwood-Jones).
Apiectoides discolor Sm. New species from Inverness (July 16, '05), and mouth of Skeena R. (June, '05); described by Dr. Smith in the Journ., New York Ent. Society, December, 1905.
6605 **Sthenopis quadiguttatus Grt.** One specimen from Kootenay Lake; determined by Dr. Fletcher for Mr. Dashwood-Jones.
833 **Eubaphe immaculata Reak.** Several specimens at Revelstoke, July, 1904; determined, with a query, by Dr. Dyar for Mr. A. H. Bush.
1721 **Paragrotis furtivus Sm.** Vancouver, July, 1904. Determined by Dr. Smith for Mr. A. H. Bush.
526 **Polites peckius Kby.** Recorded from Nelson by Mrs. Nicoll.

OCCASIONAL NOTES.

We were pleased to have a visit from Mr. F. H. Wolley-Dod, of Calgary, a few weeks ago. He fortunately just came in for a sample of our finest spring weather, when the moths were just beginning to fly round the lights. Those members whom he visited obtained much benefit from his knowledge of a fauna not far removed from our own.

It is expected that Dr. Dyar will honour us with a visit early in July. We look forward to seeing him again, and hope this time he will stay long enough for us to show him some good collecting.

The 36th Ontario Report contains a valuable paper by Mrs. Nicoll of South Wales, on her recent collecting trip through B. C., with a list of the butterflies taken. In conjunction with Dr. Fletcher's notes at the end, this list throws fresh light upon the distribution of our butterflies. We think No. 27 should be **A. rhodope** and No. 53 **P. barnesii**. No. 104 is most likely our **ladon, var. nigrescens**; No. 107 var. **manitoba**; Nos. 93 and 114 are, we think, erroneously reported from Vancouver.

BULLETIN

— OF THE —

British Columbia Entomological Society

QUARTERLY JUNE, 1906 No. 2

SYSTEM IN COLLECTING.

When the budding entomologist first makes up his mind to sally forth in quest of insects, his first thought is to equip himself with a net and a cyanide-bottle; then he procures pins, setting-boards and boxes, and before long he has a "collection."

Now if his sole object is innocent and healthful recreation, no doubt this object is thus to be attained. But if his aims are higher, if he wishes to benefit the science of which he is a votary, and if he desires his work to be helpful to his fellow-workers, he must do more than this.

He may have a well-arranged and extensive collection—he may possess many rare or even undescribed species, but his energy will be wasted if he does not study them, and above all keep records of his work upon a definite system.

In advocating this I would like strongly to insist upon two points—first, the use of labels, and second that of note-books.

To a man studying insects a specimen without a label is of little or no use. For example: A specimen of the eastern butterfly, Vanessa huntera, is in itself of no great interest, while the same insect with a B. C. label would be of tenfold value in indicating the distribution of that species. Again, in studying the habits of an injurious insect, the date of capture is most important, as evidence on the question whether it is double-brooded, and whether it hibernates in the imago form or otherwise.

Let me then urge all collectors never to place a specimen in their collections without a clearly-written or printed label indicating the locality and date of capture; the collector's name may be added if desired.

The use of a note-book is of even greater importance than the use of labels. Herein we can permanently record not only the capture of those insects which are in our collections—and which may some day be useless from grease or attacks of vermin, or exchanged with other collectors—but also the occurence of insects seen by us but not actually taken—or at least not kept—and of insects taken by other collectors while in our company.

Moreover we must needs capture a number of insects to which we cannot at once assign names. These being sent away for determination may pass out of our possession; but if our note-book records the capture, with a brief description of the unknown insect, we may expect more easily to take other specimens, and more readily to identify them when taken.

No doubt each collector will evolve for himself a system of note-taking; my own is as follows:

Each order, or family in some cases, has a certain number of pages allotted to it. Each species is put down as it turns up, the name, when known, being followed by the date and locality in an abbreviated form. Every subsequent record of that species is noted on the same page, the name of the species thus needing only to be written once.

Where the species is unknown, a number occupies the place of the name, and in a different part of the book the number is again inserted, followed by a brief description of the insect, and giving its family, and genus, so far as our knowledge can ascertain them.

Then, when the name is ultimately obtained, it is written in over or after the number, and the record is as complete as if we had known the name from the first.

Now all this implies work no doubt, but I have made it clear, I hope, that it is work well worth doing, and that it will amply repay the worker for his pains. If all our collectors kept faithful records for a year or two, we should have a B. C. list of insects that any Province or State would find it hard to equal.

NEW BOOK.

"Butterflies of the West Coast," by W. G. Wright. Published by the Whitaker Ray Co., San Francisco. Price $4.00.

This fine book will be indispensable to all students of Western Lepidoptera, including, as it does, a large number of species omitted in Dr. Holland's work. In general execution of the coloured plates, it is quite equal to either the Butterfly Book or the Moth Book. The figures are arranged more systematically on the plates, and the

numbers of the figures are plainly given before each name in the text. As the number of species figured is comparatively small, the plates give nearly always the male, female and under-side, besides many varieties and aberrations.

Most of our B. C. butterflies are here, but about a dozen are missing, including such well-known insects as Vanessa j-album, Erebia vidleri, Pamphila mandan, Thanaos icelus, and others.

In the text of the work we find, as the natural result of twenty-five years' work, a mass of interesting information from the author's personal observations of the life-history, habits and distribution of the species he mentions.

Many of his conclusions will be strongly disputed, and we venture to doubt the accuracy of some of his determinations.

For example, fig. 112 is our Argynnis bremnerii without a doubt; fig. 119 is a specimen of A. rhodope. Fig. 199 is surely not Phyciodes tharos? It seems to be the same as fig. 206 on the same page, which is called P. picta. Fig. 198 is what we have been calling P. tharos, following Dr. Holland's illustrations, but Mr. Wright describes it as a new species, P. pascoensis. Figs. 358, 359 are probably both incorrectly named. Fig. 140 is very unlike our specimens, nor does it resemble Dr. Holland's figure or A. eurynome. Possibly it is var. clio. Among the Hesperiidae, several of his species are represented in the plates by two males, not male and female, as the text indicates.

The plates of Melitaea and Phyciodes are particularly clear and good.

INTERESTING CAPTURES.

239 **Basilarchia archippus Cram.** Several at St. Leon Hot Springs, Arrow Lake, August, 1905. Determined by Dr. Fletcher for Mr. Dashwood-Jones.

420 **Nomiades lygdamus Dbloy.** Kootenay Lake, Aug., 1905; determined by Dr. Fletcher for Mr. Dashwood-Jones.

905 **Ammalo tenera Hbn.** Vernon; determined by Dr. Fletcher for Mr. E. P. Venables.

1395 **Rhynchagrotis placida Grt.** Vancouver, Sept., 1903; determined by Dr. Smith for Mr. A. H. Bush.

1477 **Noctua esurialis Grote.** Vancouver, July, 1905; determined as typical by Dr. Smith for Mr. A. H. Bush.

1579 **Paragrotis plagigera Morr.** Spatsum; July, 1903; determined by Dr. Smith for Mr. A. H. Bush.

1700 **Paragrotis reuda Streck.** Vancouver, July, 1905; determined by Dr. Fletcher for Mr. A. H. Bush.

2147 **Bellura gortynides Walk.** Only one previous record. Vancouver, July 9th, 1905; determined by R. V. Harvey for Mr. A. H. Bush.

2492a **Autographa pseudogamma Grit.** A very fine specimen from Stikine River, August, 1904. Determined by Dr. Fletcher for Mr. T. Wilson.

2854 **Catocala briseis Edw.** Arrow Lake, Aug., 1905. Determined by Dr. Fletcher for Mr. Dashwood-Jones.

3006 **Erebus odora Linn.** One very dark specimen from St. Leon Hot Springs, Arrow Lake, Aug., 1905. Determined by Dr. Fletcher for Mr. Dashwood-Jones.

3638 **Deilinia behrensaria Hlst.** Vancouver, July 24th, 1905. (New locality); determined by Rev. G. W. Taylor for Mr. A. H. Bush. Also a specimen from New Westminster (Dashwood-Jones).

1 **Parnassius clodius Men.** Recorded from Greenwood by Mrs. Nicoll. The only record east of Mt. Cheam.

THE SPRING MEETING.

This meeting was held at Duncans, on Thursday, April 19th. The chair was taken by the President, Rev. G. W. Taylor, F.R.S.C., and six other members were present. The President called attention to the fact that this was the first meeting to be held at Duncans, and expressed his conviction that some good work would be done at that place, now that five of our members reside in the district.

Mr. R. V. Harvey then read a paper on "The distribution of Insects in Western N. A.," in which he endeavoured to account for the similarity between our fauna and that of Europe, with notes on some species, chiefly Syrphidae, described from the White Mountains of New Hampshire, and recently recorded from B. C. A vote of thanks was passed to Mr. Harvey for his paper.

Messrs. Wolley-Dod, of Calgary, G. O. Day, of Duncans, and T. M. English of Cowichan, were elected members.

Mr. E. M. Skinner showed some interesting insects from the Skeena River, including a fine Hepialid, **Sthenopis (quadrimaculatus)**. Mr. Livingstone showed some uncommon Geometers and other Lepidoptera. The rest of the evening was spent in examining the fine collections of Mr. A. W. Hanham, to whose hospitality we were indebted.

OCCASIONAL NOTES.

Our President travelled to Ottawa on the 17th of May, where he read a paper before the Royal Society of Canada on the Geometrid Moths of British Columbia, with descriptions of a number of new species. This paper will be printed in the Transactions of the above Society, with a coloured plate of the species described.

Congratulations have been received from many quarters on the appearance of our first number, and we hope that the hearty co-operation of all the members will enable us to maintain a high standard in subsequent issues.

Our "Notes on the Season of 1906" are not so full as we should like to see them. As our next number appears in September, after the best of the collecting is over, we hope the members will keep notes of the good things they get as they go along, so that we can have a complete list, so far as the material is identified at the time.

Messrs. Sherman and Harvey have planned an expedition for the early part of July over the Hope Trail into the Similkameen country, where they expect to do some interesting collecting in various orders.

NOTES ON THE SEASON OF 1906.

VANCOUVER.—The spring was unusually dry, the March rainfall being only 2 1-4 inches, but a late frost in the middle of the month set things back considerably. Sallows were in bloom by the end of February, and produced noctuids up to more than six weeks later. Nine species of Noctuidae were thus taken in March, among the less common being **Xylina innominata** and **Calocampa nupera** (Sherman & Harvey). In April **Hypena decorata** was taken on the 5th, (Harvey), while **Xylomiges perlubens** was beaten in some numbers from cherry by Draper. About Easter **Thecla nelsonii** (if the name is correct) was fairly common. **Lepisesia ulalume** appeared at the cherry-trees on April 13th, and several have been taken since; (Bush & Draper). The two **Deilephilas, lineata and galli,** were seen in May at flowers **Hyphantra textor,** the Fall Web-worm, which has been rare of late years, was captured May 11th (Harvey). Of Geometers **Brephos infans** was seen on March 7th by Mr. Bush, and later a specimen was taken by Mr. Sherman.

In Coleoptera Mr. Sherman took **Dendroides canadensis** on April 7th, and Mr. Harvey's captures at Vancouver include the following;—**Staphylinus badipes,** two specimens, April 8th and 14th; **S. rutilicauda,** one May 19th, from a rotten log; **Coccinella sanguinea,** several in April and May; **Adalia bipunctata,** a pair in cop; on a plum-tree May 19th; **Areopus monachus,** several on April 28th; **Limonius subauratus,** two, May 4th and 13th; **Corymbites suckleyi,** April 19th; **C. cruciatus,** May 13th; **Haltica bimarginata,** April 14th.

In Diptera 42 species were taken in April, of which 26 were Syrphidae, including several species new to our list but not yet determined. Mr. Sherman took **Crioprora alopex** on March 24th, **Sphecomyia pattoni** on April 28th, **Myopa plebeia** on April 7th, and an uncommon Stratiomyiid, **Sargus viridis,** on April 28th.

VICTORIA.—Mr. E. M. Anderson spent part of May in the Clayoquot district, but reports Lepidoptera scarce; **Incisalia iroides** was noted, and **Alcis imitata** a very common Geometer. At Victoria **Lemonias taylori** was abundant from March 6th to 12th about Beacon Hill Park, and the larvae were taken in some numbers from wild hyacinth, as early as March 7th.

KASLO.—Mr. Cockle reports **Lepisesia ulalume** early this year and abundant at cherry blossom. Among Noctuids he notes:—**Pleroma obliquata,** two at light, April 16th; **Xylina fagina,** one at light, April 11th; **Meliopotis versabilis,** two at light, May 1st and 29th. Geometers; **Philobia enotata,** May 3rd; **Coryphista meadii,** May 11th.

VERNON.—Mr. Venables writes that he has taken a number of specimens of the rare Sphingid, **Lepisesia clarkiae,** about the end of April.

(I note that the insect going by this name in our collections resembles the figure of L. juanita in Holland's Moth Book much more than that of L. clarkiae,)

WELLINGTON.—Mr. Taylor has taken five species of Sphingids in his garden on one day, including the two **Deilephilas, L. ulamune, Sphinx vancouverensis** and **Hemaris rubens (thetis).** Cherry and willow produced, among other Noctuids, **Xylina amanda,** April 17th; **Xylomiges perlubens,** April 16th.

Of Geometers the following are worth recording; **Nyctobia nigroangulata,** April 17th; **Hydriomena menzanita,** April 16th; **Jubarella danbyi,** two at willow blossom, April 20th.

DUNCANS.—No records have been received as yet, but Messrs. Taylor and Harvey collected, on April 19th, some Coleoptera, including **Cychrus angulatus.**

THE BRITISH COLUMBIA LIST.

Coleoptera. ..Family Buprestidae.

The Buprestids are rather long and narrow beetles, often metallic in colour, and are found upon flowers or basking in the sun. The larvae are known as "flatheaded borers," and attack orchard and other trees by boring in the wood. Some of the eastern species of Agrilus cause galls on raspberry and blackberry canes. Our species of Buprestis are very handsome insects, being adorned with bright metallic green and copper.

Chalcophora, Sol.
4568 **angulicollis Lec.** Victoria, Wellington, New Westminster.
Dicerca, Esch.
4576 **prolongata Lec.** Victoria.
4583 **tenebrosa Kby.** Wellington, Vernon.
4587 **sexualis Cr.** Vancouver.
Buprestis, Linn.
4606 **maculiventris Say.** Common everywhere.
b. **var. rusticorum Kby.** Vernon.
4607a **langii Mann.** Generally distributed.
4610 **lauta Lec.** Victoria, Wellington, Vancouver, Vernon.
4611 **adjecta Lec.** Shawnigan, Wellington.
Melanophila, Esch.
4619 **longipes Say.** Wellington, Vancouver.
4621 **drummondi Kby.** Vancouver Island and Mainland.
4623 **gentilis Lec.** Wellington.
Anthaxia, Esch.
4628 **aeneogaster Lap.** Wellington, Vancouver.
Chrysobothris, Esch.
10076 **caurina Horn.** Wellington.
4650 **trinervia Kby.**
4646 **carinipennis Lec.** "B. C." (Evans).
Acmaeodera, Esch.
4697 **variegata Lec.** Vernon.
Chrysophana, Lec.
4716 **placida Lec.** Wellington, Vernon.
Agrilus, Steph.
4742 **politus Say.** Wellington.

DIPTERA. FAMILY BOMBYLIIDAE.

These are the bee-flies, so called from being more or less clothed with long whitish hairs, giving them a close resemblance to bees. They hover over flowers, and are fond of alighting on bare spots in the sunshine. Most of the larvae are parasitic, some on lepidopterous larvae, others on grasshoppers or bees. On the whole they may be regarded as beneficial.

Spogostylum, Macq.
analis Say. Mission Junction.
melanopogon Bigot. Vancouver.
oedipus Fabr. Generally distributed.
pauper Loew. Vancouver Island.
Exoprosopa, Macq.
dorcadion O. S. (capucina Fab.) Vancouver Island.
Dipalta, O. S.
serpentina O. S. Wellington.
Anthrax, Scopoli.
agrippina O. S. Generally distributed.
alternata Say. Victoria.
fulviana Say. Victoria, Vancouver.
eumenes O. S. Victoria.
harveyi Hine. Mt. Cheam.
lateralis Say. Generally distributed.
lucifer Fabr. Vernon.
seminigra Loew (morio L.) Generally distributed.
sinuosa Wied. Vancouver Island.
Bombylius, Linn.
lancifer O. S. Okanagan Lake.
major Linn. Abundant everywhere.
Systoechus, Loew.
candidulus Loew. Victoria, Vernon, Mt. Cheam.
oreas O. S. Victoria.
Eclimus, Loew.
auratus Will. Victoria.
lucifer O. S. "Vancouver Island" - (Aldrich; Catalogue)
magnus O. S. "Vancouver Island" - (Aldrich; Catalogue)
Aphoebantus, Loew.
hirtus Coq. Goldstream.

FAMILY THEREVIDAE.

The "stiletto flies," having a slender pointed abdomen. They are like robberflies, but have quite slender legs. We have but one species.

Thereva, Latr.
frontalis Say. Vancouver.

NOTE. Records are requested for subsequent issues in the families: Asilidae, Tabanidae and Stratiomyiidae.

BULLETIN

— OF THE —

British Columbia Entomological Society

QUARTERLY SEPTEMBER, 1906 No. 3

A COLLECTING TRIP THROUGH THE CASCADE MOUNTAINS.

By R. V. Harvey and R. S. Sherman.

From the old Hudson's Bay post of Fort Hope, on the Fraser River, ninety miles from Vancouver, a trail crosses the Cascade Range, locally known as the Hope Mountains, to the mining town of Princeton on the Similkameen, a distance of sixty-five miles. Our collecting trip over this trail occupied from July 10-28 of this year, and it was most interesting to note the change from the fauna of the damp coast to that of the dry belt, the two being separated by a strictly alpine fauna, confined to the highest point of the route (5,800 feet).

The Hope trail first ascends a small creek, known as the Nicolum River; the vegetation here is very luxuriant. At the upper part of this valley we met with several species common on Vancouver Island, but not on the adjoining coast. After crossing a high ridge the route descends the Samallow, a tributary of the Skagit, and for some miles ascends the course of the latter stream. Here the first change is noticeable in the trees, hemlock and cedar giving place to balsam-fir and yew, with large cotton-woods and aspen poplars.

Turning again, the trail leaves the Skagit and ascends Skagit Creek. A large part of the journey here lies through open areas where the timber has been burnt. Near the head of this creek the pine comes into evidence, and the timber continues, though of small size, until close up to the summit itself.

This summit is an open plateau, thickly clothed with flowers:—yellow daisies, blue lupines and scarlet Castilleias, and afforded the best collecting ground of the whole trip. On the other side the trail descends Whipsaw Creek, through a forest almost wholly of pine, to within nine miles of Princeton. This last stretch was a comparatively level range of bunch-grass, interspersed with tall pines, but having fewer flowers and fewer insects.

We recorded in all fifty-four species of butterflies, most of which are mentioned in the following list:—

Parnassius clodius was common in all the open glades along the Nicolum, and along the trail as far as Skaist Creek. At the Summit it was replaced by **P. smintheus,** but neither species was met with upon the eastern slope.

Papilios were not common; the ordinary coast species, **P. rutulus** and **P. eurymedon** were occasionally seen as far as the Skagit, none beyond.

Of the Whites, **Pontia rapae** was taken on the Nicolum, and **P. pallida** as far as the Samallow. **Synchloe ausonides** and **S. sara, var. reakirtii** occured near the Summit. Two species of Eurymus were taken on Whipsaw Creek and about Princeton; one of them seems to be **E. emilia.**

Argynnids were abundant; **A. electa** turned up a few miles beyond the Nicolum; it haunted about a mile of the trail and then disappeared altogether. **A. rhodope** was captured only near the Summit, **A. leto** in some numbers at a creek nine miles south of Princeton, and **A. eurynome,** with an unsilvered variety (A. clio?) was very abundant east of the Summit, rising in clouds from every damp spot on the trail. In the Similkameen valley occurs another Argynnis resembling **A. bremnerii,** but which, when the writer took it at Vernon two years ago, was declared by Dr. Skinner to be an undescribed species.

B. epithore occurred nearly everywhere, and **B. chariclea** at the Summit and beyond.

Several specimens of **Lemonias palla** were taken on both sides of the divide, and another species with it, as yet undetermined, but resembling **L. cooperi.**

On our return journey we found **Vanessa californica** very common on the Samallow. A few **V. cardui** were seen, and **Basilarchia lorquinii** everywhere except on the actual Summit.

On the far side of the divide we found **Oeneis chryxus** in some numbers; **Cercyonis charon** very abundant in the Similkameen, while **Coenonympha ampelos** was common on the upper Whipsaw—larger and brighter specimens than those we take at Victoria.

Thecla californica and **T. saepium** were recorded at fairly high elevations on both sides of the mountains. **Epidemia mariposa** was common nearly everywhere beyond the upper Nicolum, while **E. helloides** was not nearly so abundant.

Of the Blues—one specimen of **Cupido heteronea** was taken at Princeton; **N. antiacis** occurred at the Summit with **Agriades aquilo**; but the commonest blues were **Cupido ardea** and **Rusticus anna** (?).

Among the Hesperiidae we noted **Amblyscirtes vialis, Pamphila palaemon, Euphyes metacomet. Thanaos persius,** and a single specimen of **Hesperia caespitalis** at the Summit.

We hope at a later date to be able to give some account of the Moths taken on this interesting trip.

NOTES ON THE SEASON OF 1906.

VANCOUVER.—May and the first half of June were unusually wet, but July was very dry. No very notable records have come to hand in the Lepidoptera; the best captures in the Noctuidae were **Autographa mappa,** June 13, and **Rhynchagrotis gilvipennis,** Lulu Island, June 22.

Mr. Harvey received from a friend a fine specimen of **Aemilia roseata,** taken early in July on the Squamish River. R. Draper took **Hepialus hyperboreus, Euchalcia putnami** and **Autographa epigaea** on August 31st.

Among the Geometridae **Callizia amorata** was seen on July 2; (Harvey).

In Coleoptera Mr. Harvey records:— **Corymbites aeripennis,** June 13; **Asaphes morio,** July 8; **Lina scripta,** Squamish, July 21; **Cephaloon lepturides,** June 24.

The following Diptera were captured by Mr. Harvey:—**Lasiophthicus pyrastri,** April 7; **Criorhina scitula,** June 1; **Tabanus comastes (captonis),** June 1; **Sargus decorus,** Aug. 10.

KASLO.—Mr. Cockle sends the following notes:—The summer has been uneventful and sugaring was no use owing to the dryness of the evenings. All important captures recorded were made at light.

Eurymus emilia, one male, Aug. 19, a new record for Kootenay Lake; **Sphinx vancouverensis,** and **S. drupiferarum,** both bred.; **Apantesis ornata,** two females, June 12-25; (only one true ornata previously taken but vars. achaia and ochracea usually plentiful); **Platyperigea praeacuta,** July 21; **P. anotha,** 2 specimens, Aug. 15-19; **Hadena lignicolor,** July 18, first record for Kootenay; **Oncocnemis barnesii,** female, Aug. 19, the third specimen known; type from Yellowstone Park; **Noctua fennica,** plentiful at light; **Chorizagrotis auxiliaris,** Aug. 10-15; **C. balanitis,** Aug. 19; **Euxoa plagigera,** May 29; **E. terrenus,** 4 specimens, July 2- to Aug. 10; **Scotogramma densa,** Aug. 1; **Heliophila unipuncta,** July 16, second record for Kaslo; **Cucullia postera,** June 3, July 21; **Plusia aereoides,** July 17; **Autographa mappa,** July 10; **Odontosia elegans,** July 3-13; **Cerura scolopendrina,** June 21 to July 16; **Gluphisia septentrionalis,** July 8-16; and in Geometridae, **Sciagraphia continuata,** var. **atrifasciata,** June 30; **Synchlora rubrifrontaria,** Aug. 19.

VERNON.—Mr. Venables records taking **Eudamus pylades,** May 23rd, **Cupido sagittera** and **C. heteronea** on April 20th. Among Coleoptera, Mr. Bush took **Epicauta maculata** on goldenrod, July 19, and **Nemognatha apicalis** and **Chrysomela elegans** on the same date.

FIELD.—Mr. Bush collected in this neighborhood on July 25-26, and took **Agriades aquilo, Argynnis electa, A. eurynome, A. clio,** and a fine specimen of **Sthenopis quadriguttatus,** July 26. Also **Chrysotoxum derivatum** (Syrphide).

REVELSTOKE.—**Caripeta aequaliaria,** July 22, (Bush).

SICAMOUS.—**Noctua oblata,** July 21, (Bush).

KAMLOOPS.—A. Bombyliid, **Spogostylum analis,** July 17, (Bush); also from Nelson in 1904.

INSECT PESTS AT KASLO IN 1906.

The following report comes to us from Mr. J. W. Cockle:—

"The summer has been notable for the absence of most of the usual pests affecting agriculture. No "Peridroma" were in evidence. **Euxoa ochrogaster** was scarce, and no damage was reported from any of the usual cutworms. The only exception was the prevalence of Pear-leaf Blister Mite, which on neglected trees proved most destructive, completely destroying the foliage, and also attacking the fruit. A note on the prevalence, and preventive measures to be adopted will be published by the Department of Fruits, Ottawa, in the crop reports.

Much damage was caused to the foliage of **Populus tremuloides** by the leaf-miner **Lithocolletes populiella Clem.,** but as these only mature late in the season, it does not affect the growth of the tree.

Lyonetia speculella Clem. is gaining ground in the apple-trees. This insect, which mines the Ceanothus, is gradually acquiring the apple-habit, and as the wild brush is cleared out to make room for apple orchards it has naturally been compelled to change its food-plant. It is double-brooded, and its ravages on the wild ceanothus often result in the complete denudation of the leaves of that plant.

THERINA SOMNIARIA AT VICTORIA

This Geometrid moth, only too well known under the name of the "Oak-Looper," has again been extremely destructive to the oak trees all round Victoria.

The Report of the Entomologist and Botanist, Dr. J. Fletcher, for last year, when the moth was equally abundant, has the following remarks on the species, which we venture to quote:—"We observed one instance where the larvae, after having stripped the oak-trees, had spread for a short distance into a grove of Western Hemlock, Spruce and Douglas Fir, the leaves of which had to some extent been eaten by them. Mr. Taylor considers it probable that **T. somniaria** of Hulst is a variety of **T. fiscellaria** of Guenee. He says that fiscellaria and somniaria feed as larvae on deciduous trees, while true fervidaria feed on conifers."

It is interesting to note that this same moth occurs, though in comparatively small numbers, in the neighborhood of Vancouver at the same season as it appears on the island; yet there are no oaks at all in the district referred to, and the moth is supposed to feed on the Hemlock.

CORRECTIONS.

On page two of our last issue the name "quadrimaculatus," three lines from the foot of the page, should read "quadriguttatus."

With reference to the statement on the same page concerning the distribution of Parnassius clodius, we have received records of its occurrence in two other places east of Cheam; it is taken all up the Fraser valley as far as Lytton, and a single small male specimen has been taken as far east as Nelson.

NEW GEOMETRIDAE FROM B. C.

The following new species of Geometridae of British Columbia are characterized in a paper read at the last meeting of the Royal Society of Canada by the Rev. G. W. Taylor:—

Eupithecia olivacea	Wellington and Vancouver.
harveyata	Vancouver.
dyarata	Kaslo.
hanhami	Victoria.
bryanti	Stickeen.
insignificata	Wellington.
sublineata	Wellington.
modesta	Vancouver.
obumbrata	Goldstream.
Eucymatoge vancouverata	Wellington, Vancouver and (?) Kaslo.
Eustroma harveyata	Vancouver and Stickeen.
Zenophleps victoria	Victoria.
Hydriomena manzanita	Wellington.
Xanthorhoe fossaria	Mt. Cheam.
pontiaria	Wellington.
Leptomeris subfuscata	Victoria, Vernon.
Deilinia bryantaria	Stickeen.
Enypia packardata	Wellington, Victoria, Kaslo, Mt. Cheam.

All these names will be found entered in the check list of B. C. Lepidoptera recently published by the Provincial Department of Agriculture.

THE BRITISH COLUMBIA LIST.

Odonata.

The Odonata or Dragon-flies are in the adult stage more or less predatory, feeding upon mosquitoes and other small flies. Some species oviposit on the surface of the water, others crawl down reeds and oviposit beneath the water. The larvae are carnivorous, and sluggish in habit, seizing their prey by means of a curiously hinged jaw. The nymph crawls up a stem into the air when the winged adult is ready to emerge. These insects are not markedly either beneficial or injurious to man.

The following list is compiled by Professor Raymond C. Osburn, of the Columbia University, New York; it appeared in the Entomological News for June, 1905.

Family **Agrionidae.**

Lestes congener Hagen	Wellington, 1 specimen.
uncatus Kby	Kaslo.
forcipatus Ramb	Victoria, Langford, Glacier, Kaslo.
Argia vivida Selys	Glacier, 1 specimen.
Amphiagrion saucium Bur	Victoria.
Enallagma calverti Morse	Vancouver, Ainsworth.
cyathigerum Charp	Victoria, Shawnigan, Kaslo.
carunculatum Morse	Victoria, Renfrew, Agassiz, Kaslo.
Ischnura erratica Calv	Vancouver, Langford.
perparva Selys	Victoria, Langford.
cervula Selys	Victoria, Shawnigan, Agassiz, Kaslo.

Family Cordulegasteridae.
Cordulegaster dorsalis Hagen.....Vancouver.
Family Aeschnidae.
Aeschna juncea Linn.....Kaslo, 1 specimen.
californica Calv. .....Victoria, Langford.
multicolor Hagen .....Victoria, Langford, Kaslo.
constricta Say .....Shawnigan, Wellington.
Family Cordulidae.
Tetragoneuria spinigera Selys.....Victoria, Langford, Goldstream.
Somatochlora semicircularis Selys.....Langford, Glacier, Ainsworth.
forcipata Scud .....Renfrew, 1 specimen.
Cordulia shurtleffi Scud.....Kaslo.
Family Libellulidae.
Leucorhinia hudsonica Selys.....Vancouver, Kaslo, Ainsworth.
proxima Calv.....Kaslo.
Sympetrum rubicundum Say.....
var assimilatum Uhl.....Harrison R., Kaslo.
obtrusum Hagen .....Victoria, Langford, Kaslo.
pallipes Hagen .....Langford.
vicinum Hagen .....Langford, Wellington.
semicinctum Say .....Langford, Kaslo.
costiferum Hagen .....Victoria, Langford, Kaslo.
madidum Hagen .....Victoria, Shawnigan, Kaslo.
illotum Hagen .....Victoria, Shawnigan.
corruptum Hagen .....Kaslo.
Mesothemis simplicicollis Say.....
var collocata Hagen.....Victoria, Langford.
Ladona julia Uhler.....Langford, Shawnigan.
Libellula quadrimaculata Linn.....Victoria, Shawnigan, Vancouver, Kaslo.
forensis Hagen .....Victoria, Shawnigan, Vancouver, Kaslo.
Plathemis lydia Drury.....Victoria, Vancouver.
Pachydiplax longipennis Burm.....Victoria, (recorded by Hagen).

THE BRITISH COLUMBIA LIST.

DIPTERA—Family Tabanidae.

The Tabanidae or Horseflies occasionally prove serious pests to stock, and sometimes even to man. The mouth-parts consist of a series of fine sharp-pointed lancets, so rigid that they readily pierce the skin, lying in a soft fleshy labella. The female alone sucks blood, the male lives on the pollen or nectar, as is the case with the mosquitoes. The larvae are carnivorous, living in water or marshy soil.

The following is adapted from a paper, "Tabanidae of the Western United States and Canada," by Professor J. S. Hine, of the Ohio State University, who has helped us greatly in our studies of this order; it appeared in December, 1904:

Pangonia Latr.
fera Will .....Mt. Cheam.
Chrysops Meig.
excitans Walk .....Vancouver, Goldstream, Hope Mts.
mitis O. S.....Vernon.
noctifer O. S.....generally distributed.
proclivis O. S. .....Victoria, Shawnigan, Vancouver, Grouse Mt.
Silvius Meig.
gigantulus Loew .....generally distributed.
Tabanus Linn.
aegrotus O. S. .....Victoria, Goldstream, Wellington.
affinis Kby .....Victoria, Wellington.
captonis Marten .....Goldstream, Mt. Arrowsmith, Grouse Mt., Hope Mts., Cheam.
fratellus Will .....Victoria, Renfrew, Mission, Hope Mts.
osburni Hine .....Cheam Mt., Hope Mts.
phaenops O. S.....“From B. C.” (Hine).
insuetus O. S.....Vernon.
epistatus O. S.....Vernon.
punctifer O. S.....Vernon.
septentrionalis Loew .....Vancouver (?), Vernon.
sequax Will .....Grouse Mt., Cheam Mt., Similkameen, Glacier.
sonomensis O. S. .....Renfrew, Mt. Arrowsmith, Vancouver.

Note:—The species recorded from Vernon only are not contained in the paper of Prof. Hine, and were named by other authorities.

BULLETIN

— OF THE —

British Columbia Entomological Society

EDITED BY R. V. HARVEY, M. A. VANCOUVER, B. C.

QUARTERLY DECEMBER, 1906 No. 4

NOTES ON THE DISTRIBUTION OF INSECTS IN BRITISH COLUMBIA.

(By R. V. Harvey).

No one who has studied the insects of our province, if fresh from the study of the forms found in Europe, can have failed to remark the extraordinary similarity of our species and genera to those of the Old World. An entomologist coming straight out here from England would have no trouble in placing in their correct genera nine-tenths of the butterflies he caught in British Columbia; he would even recognize several species as being identical with those of the west of Europe, e.g. **Pontia rapae, Vanessa cardui,** and **atalanta, V. antiopa,** and **Pamphila palaemon** (mandan). Among the moths, too, he would find old acquaintances, such as,—**Deilephila galii, Arctia caia, Peridroma saucia,** and **Scoliopteryx libatrix.** But he would be chiefly struck by the number of species so closely allied to those of Britain as to require a careful examination to differentiate them.

If, however, our entomologist were to make a lengthened stay in Eastern Canada, he would find by no means the same close correspondence between the new fauna and that which he knew at home. He would notice more strange-looking species, and more genera to which he could not assign a name, and whose aspect was decidedly more tropical. Why, he might ask, should a journey of three thousand miles farther west bring me to a fauna much more like that which I left behind in England?

This, then, is the question which I propose to discuss.

There are, first, two facts of which we are very liable to lose sight. The first is that, to the zoogeographer, Europe is not a continent at all, but simply the western portion of the faunal region, known variously as Eurasia, or the Palearctic Region, which extends from the Atlantic coast of Europe to the Behring Straits and the Archipelago of Japan. The fauna of this enormous division is so homogeneous that, in the words of Alfred Wallace, "the majority of the genera of animals in Great Britain and northern Japan are identical." In exemplification of this fact I have noted that, of 124 species of Diptera listed from Japan in 1898 by Prof. Coquillet, 30 were originally described from Europe, (and of these 30 about ten have already been recorded from B. C.); while of the rest he says, "they so closely resemble European forms as to make their specific distinctness an extremely difficult question to decide." Further, out of 83 genera of Japanese Diptera, 73 are represented in North America.

(To be Continued.)

VANCOUVER NATURALISTS' FIELD CLUB.

We note with satisfaction the formation of a Naturalists' Field Club at Vancouver, and wish every success to this new Society. Several field-days, mostly of a botanical nature, were held in September, previous to the first annual meeting, which took place on October 6th. Mr. William Burns, Principal of the Vancouver Normal School, was elected President of the Club and read an interesting paper on the value of local associations. Two other meetings have been held, and papers read by Miss Eaton, on the Lemuridae, and Mr. R. V. Harvey, on Insect Mimicry. Many of our members have joined this club, and we have no doubt that excellent work will be done in the various branches of natural Science.

THE BRITISH COLUMBIA LIST.

A Check List of British Columbian Lepidoptera.

This Catalogue, which has recently been printed by the Provincial Department of Agriculture, is in many respects a great improvement on the last list. Many doubtful names have been omitted, and many new names have been added, while the arrangement is altogether better. At the same time, the studies of our members, and their collecting trips into untrodden parts of the province, will make it necessary from time to time to make corrections and additions to this list.

CORRECTIONS.

On page 15, **Hadena cerviana Sm.** should have been listed as a variety of H. basilinea Fab: not of **H. finitima Guen.**

Page 29, foot, Insert before the name **"nigroangulata Strecker,"** the genus NYCTOBIA (Hulst).

Page 30. For "lariciata Freyer" read **"perbrunneata Taylor."**

For **"laquearia H-S,"** read **"albicapitata Pack."**

Page 33. For "EUCROSTES" read "EUCROSTIS."

Page 26. For "ERASTRIA" read "DRASTERIA."

ADDITIONS.

P. 7. (Lemonias) macglashani Riv. .....Boundary.
P. 6. (Eurymus) emilia Edw. .....Okanagan, Kaslo.
P. 4. (Cupido) phileros Edw. .....Kaslo, Cheam, Hope Mts.
P. 11. (Sphinx) drupiferarum S&A.....Kaslo.
P. 17. (Oncocnemis) barnesii Sm.....Kaslo.
P. 20. (Mamestra) vicina Grt.....Vancouver Island, Kaslo.
P. 26. (Drasteria) caerulea Grt.....Vancouver Island.
P. 30. after Talledega montanata, insert—CARSIA (Hubn.)
paludata Thunb .....Hope Summit.
P. 34. (Diastictis) brunneata Thunb .....Hope Mts.
(Diastictis) denticulodes Hulst....Hope Mts.

ORDER ODONATA.

The following additional records of dragon-flies have been received from Professor J. Chester Bradley of the University of California:—

Lestes disjunctus Say. Male and female, at Downie Creek, Big Bend country, Aug. 13, 1906.

Other species recorded on the same trip were:—**Aeschna constricta, Say, Somatochlora semicircularis Selys, Sympetrum obtrusum Hag,** and a species of Aeschn, perhaps **elepsydra Say,** at 4000 feet on McCullough Creek, July 24.

ORDER DIPTERA—Family Tachinidae.

The Tachina flies are usually short, stout, and bristly; the larvae are parasitic, and play an important part in checking the increse of noxious insects. The female fastens her eggs to the skin of a caterpillar, and they bore their way into their host, and live there till they are full-grown. Nomenclature according to Aldrich's Catalogue, of which the pages are also given.

421 **Cistogaster, Latr.** .....
immaculata Macq. .....Hope Mts.
422 **Gymnosoma, Meig.**
fuliginosa Desv. .....gen. distributed.
423 **Alophora, Desv.**
aeneoventris Will .....Port Renfrew, Vancouver.
428 **Eulasiona, Towns.**
comstocki Towns .....Port Renfrew.
440 **Dionaea, Desv.**
nitoris Coq. .....Victoria, Vancouver.
445 **Plagia, Meig.**
americana v d Wulp .....Port Renfrew, Vancouver.
449 **Belvosia, Desv.**
bifasciata Fab. .....New Westminster.
450 **Aphria, Desv.**
ocypterata Towns .....Victoria.
450 **Ocyptera, Latr**
carolinae Desv. .....Victoria, Vancouver.
dosiades Walk. .....gen. distributed.
453 **Panzeria, Desv.**
radicum Fab (ampelus Wlk).....Vancouver, Goldstream.
453 **Gymnochaeta, Desv.**
alcedo Loew. .....Vancouver.
455 **Exorista, Meig.**
cheloniae Rond. .....Victoria.
blanda O. S. .....Vancouver.
462 **Frontina, Meig.**
frenchii Will. .....Vancouver, Kaslo.
465 **Masicera, Macq.**
chaetoneura Coq. .....Glacier.
469 **Tachina, Meig.**
robusta Towns. .....Vanc. Island.

472 **Paraphyto, Coq.**
borealis Coq. ..... Glacier, Wellington.
472 **Blepharipeza, Macq.**
adusta Loew. ..... Victoria, Vancouver.
473 **Winthemia, Desv.**
quadripustulata Fab. ..... Vancouver.
476 **Metopia, Meig.**
leucocephala Rossi ..... Vancouver.
478 **Gonia, Meig.**
capitata DeG. ..... Vancouver, Vernon, Kaslo, Wellington.
484 **Peleteria, Desv.**
robusta Wied. ..... Vanc. Island, Vernon, Kaslo.
tessellata Fab. ..... Vancouver, Vernon, Mt. Cheam.
485 **Archytas, Jaenn.**
analis Fab. ..... Similkameen.
487 **Echinomyia, Dumer.**
algenswied ..... Vancouver Island and Coast.
decisa Walk. ..... Glacier, Shawnigan.
palpalis Coq. infumata-Big ..... Victoria.
489 **Epalpus, Rond**
bicolor Will. ..... Vancouver, Wellington.
signiferus Walk. ..... gen. distributed.
491 **Bombyliomyia, B. & B.**
abrupta Wied. ..... gen. distributed.

FAMILY TABANIDAE.

The following species have been added to our list in this family since last issue:—

Chrysops frigidus O. S. ..... Hope Mts.
surdus O. S. ..... Port Renfrew.
lupus Whitney ..... Victoria.
Tabanus zonalis Kby. ..... Kaslo.

ORDERS PLECOPTERA AND NEUROPTERA.

The following species of Neuropteroid insects have been kindly determined by Dr. Nathan Banks for collectors in this Province. The list is by no means complete, and the compiler has so many unidentified species in his own collection that he would have preferred to withhold the list for the present. However, at the request of some members, it is printed now, but a supplementary list will be published as soon as the additional material in hand has been examined by Dr. Banks.

(The explanatory notes and English names have been added by ourselves.—Ed.)

ORDER PLECOPTERA.—The "Stone-Flies" are soft-bodied insects with long net-veined wings, the hind pair longitudinally folded under the fore wings. The abdomen generally bears a pair of filaments. They are found along streams, where the larvae live under stones, breathing by gill-tufts. They are of no economic importance.

FAMILY PERLIDAE.

Perlomyia collaris Banks ..... Wellington (type specimen.)
Perlodes signata Hagen. ..... Wellington.
Nemoura cinctipes Banks ..... Wellington. Common in early spring.
Taeniopteryx pacifica Banks .....

ORDER NEUROPTERA. As limited by modern scientists this order now contains insects with a biting mouth, two pairs of membraneous wings with many veins, and having a complete metamorphosis. All are carnivorous, and some aquatic, and many are most beneficial in the number of injurious insects which they destroy.

FAMILY CHRYSOPIDAE.—Lace Wings.

Chrysopa californica Coq. ..... Wellington. Common from end of April.
chlorophana Burm. ..... Wellington.

FAMILY HEMEROBIIDAE—The Aphis-Lions.

Hemerobius pacificus Banks. ..... Wellington. Common in June.
Polystoechotes punctatus Fab. ..... generally distr. July and Aug.

FAMILY MYRMEEONIDAE.—The Ant-lions.

Myrmeleon immaculatus DeGeer. ..... gen. distrib. More commonly noticed in larval state.

FAMILY **RHAPHIDIIDAE.**—Snake-flies.

Rhaphidia adnixa Hagen ..... Wellington. Common in May.

FAMILY **SIALIDAE.**—Fish-flies.

Sialis fuliginosa Pict. ..... Wellington; end of May.

FAMILY **MANTISPIDAE.**—False Rear-horses.

Mantispa brunnea Say. ..... Wellington; rare; August.

ORDER **TRICHOPTERA.**

The Caddis-flies are best known by the curious cases constructed by the larvae, out of leaves, twigs, small stones or sand, at the bottom of streams or ponds. The adult insects are somewhat moth-like, with long thread-like antennae. Most of them are vegetable feeders.

FAMILY **PHRYGANEIDAE.**

Neuronia semifasciata Say. ..... Wellington; May to end of July.

FAMILY **LIMNEPHILIDAE.**

Grammotaulius praecox Hagen. ..... Wellington; May.
Discosmoecus gilvipes Hagen. ..... Cameron Lake. (T. Bryant).
magnificus Banks ..... Wellington; rare; September.
Glyphopsyche bellus Banks. ..... " March.
bryanti Banks ..... " March-May; common.
Limnephilus indivisus Walk. ..... " June-July.
gravidus Hagen ..... " Aug.-October.
luteolus Banks. ..... " Sept.-October.
radiatus Say. ..... " Sept.-October.
sitchensis Kol. ..... " October.
externus Hagen. ..... " April.
concolor Banks. ..... " September.
Goniotaulius partitus Walk. ..... " October.
Asynarchus tristis Banks. ..... " September.
Platyphylax designatus Walk. ..... "
Halesus taylori Banks ..... " common; Aug.-Nov.

FAMILY **RHYACOPHILIDAE.**

Rhyacophila coloradensis Banks ..... Wellington.

FAMILY **HYDROPSYCHIDAE.**

Hydropsyche Sp. ..... Wellington; common Oct.
Polycentropus Sp. ..... Wellington.

COLEOPTERA.—Family **Cicindelidae.**

The "Tiger-beetles," though wholly predaceous, are not of any particular economic value. They are usually of a metallic green or bronze color, and fly up before us on hot dusty roads. The larvae makes a hole in sandy places or beaten paths, and entraps unwary insects. Our coast has but a few species, but the interior of the province is much richer in this family.

Omus Esch .....
2 dejeani Reich ..... Vancouver Island and Mainland.
4 audouini Reich ..... Victoria.
Cicindela Linn.
18 lonilabris Say. ..... Kaslo, Vernon.
c. var., montana Lec. ..... Vernon.
25 purpurea Oliv. ..... Victoria, Wellington, Vernon.
b. var., graminea Sch. ..... Vernon.
c. var., cimarrona Lec. ..... Victoria.
32 vulgaris Say. ..... Vancouver Island, Vernon, Kaslo.
b. var., vibeff Horn ..... Vernon.
33 repanda Dej ..... Victoria.
a. var., oregona Lec. ..... common everywhere.
c. var., 12-guttatt Dej ..... Victoria, Vernon.
34 pusilla Say. ..... Vernon, Okanagan Falls.
36 cinctipennis Lec. ..... Vernon.
a. var., imperfecta Lec. ..... Vernon.

LOCALITY LABELS.

The Secretary has on hand a stock of locality labels on stout paper, which he will supply at two hundred for five cents, assorted as desired, post free to members. The labels are as follows:—Vancouver, New Westminster, Grouse Mt., Mission Jc., Chilliwack, Harrison, Goldstream, Shawnigan, Koksilah, Somenos, Mt. Sicker, Mt. Arrowsmith, Quamichan Lake, Cowichan Bay, Cameron Lake, Kamloops, Sicamous, Nicola, Tulameen, Kaslo, Vernon, Nelson, Field, Rossland, Similkameen, Hope Mts.

BULLETIN

— OF THE —

British Columbia Entomological Society

EDITED BY R. V. HARVEY, M. A. VANCOUVER, B. C.

QUARTERLY MARCH, 1907 No. 5

THE COMING SEASON.

As the season here practically opens in March, when the sallow bloom attracts the early noctuid, many of our members will doubtless have their setting-boards in full swing ere this issue appears. There is indeed no close season for entomologists on the coast, for insects may be taken every month of the year.

Now is the time, however, to decide upon the scope and aim of our endeavours. It may not be out of place to indicate some questions which require further study. Among the butterflies, for example, the determination of our Sulphurs and some of the Blues and Checker-spots is not altogether satisfactory. There seems also to be some confusion in our collections among the Theclas, especially the species going under the names—**nelsonii, blenina, and johnsonii.**

In Coleoptera we have an offer from Professor H. F. Wickhan, of Iowa City, to name our Cerambycidae, and a box of "longhorns" has already been despatched to him.

Our Diptera are in the able hands of Professor J. S. Hine, of Columbus, Ohio, except the Syrphidae, which are being worked over by Professor R. C. Osburn, of New York.

NOTES ON THE DISTRIBUTION OF INSECTS IN BRITISH COLUMBIA.

By R. V. Harvey. (Continued).

The second fact to which I wish to call attention is that the general trend of human exploration from Europe across the Atlantic westward is apt to blind us to the possibility that in past geological ages the tide of immigration may have been in a contrary direction; nor does the occasional interchange of species by the way of Greenland, mostly birds, afford even presumptive proof that the Neartic Region received, say in Miocene times, any considerable influx of animals from Europe by this route, or vice-versa. In the Miocene, or better in the Pliocene age, there is ample evidence to prove that the climate of the northern hemisphere was very much more equable than it is now, and, further, that there was almost, if not quite, continous land round the North Polar Regions. This region is sometimes called Arctogaea.—"the Northland."

The fact that the mastodon appears in Eurasia in middle Miocene times, while it is not found in America until the Pliocene age, points to the fact that it came over where the Behring Straits are now; similar facts could be adduced to show that the bears, deer and tapirs originated in Eurasia, whence they migrated to the New World, probably by the same route. (Wallace).

But when we come down to more recent geological times, the Post-Pliocene or Pleistocene period, in which the species are practically the same as those which now exist, we are confronted with an event, the importance of which in regulating the present dispersal of our animals can hardly be overestimated. I refer to the Glacial Period.

There is no longer room for doubt that in the Pleistocene Epoch, the whole of northern Europe and Asia, all Canada and a large part of the northern United States, were in the condition at present existing in Greenland, namely, covered with an immense ice-sheet out of which only the tops of the highest mountains protruded. Nor can there be any doubt that the parts lying to the south of this area were very seriously affected in their climate by the presence of this ice-sheet.

We must imagine that, in the period immediately preceding the Ice-Age, a climate comparatively temperate existed round the Pole, in what is called the "Holarctic Region," which was consequently peopled by a strictly temperate fauna and flora, the ancestors of the animals and plants which now inhabit the North Temperate Zone.

On the approach of the period of cold, a southward movement must necessarily have begun, which can only have ended when the ice-sheet reached its extreme southern limit. By this time the whole of southern Eurasia, and the greater part of the

United States, at least as far south as Colorado, would be populated by an Arctic fauna of nearly the same species on both sides of the Atlantic Ocean.

We may further take it as at least highly probable that it was about this time that the isolation of America from Europe on the one side, and from Asia on the other, by impassable ocean barriers, took place. There has thus been ample time for the species on each side to develop such differences as we see at the present time.

But oceans are not the only barriers to the dispersal of animals. Those species which spread southward over the United States found themselves divided into two camps, which could never re-unite, by the great mass of the Rocky Mountains. This enables us to account as no other theory can do for the fact of the existence of well-marked geographical races of the same species on either side of the continent.

Now whether this period of enforced exile from their northern homes were long or short matters little for our purpose; we cannot doubt that, as soon as the ice began to retreat and the temperature to rise, a general movement northward would necessarily begin. It may be well to call attention at this point to the fact of the strong tie which connects the natural history of insects with that of plants. Flowering plants depend upon insects for the fertilization of their blossoms, while insects are no less dependent upon plants as food for themselves or their larvae. Consequently, even though insects can be proved incapable of enduring considerable fluctuations of temperature, so long as they depend upon plants which have not the same power, they must change their habit if their food-plant becomes extinct in their locality.

So, then, the procession of exiles (I am speaking highly metaphorically) started for the north once more. But few of them ever got to their original starting-point. They found changed conditions at almost every step, and we can hardly doubt that some species which found a congenial home on the west of the mountains would perish miserably on the bleak plains of Manitoba.

This question of climate is of the greatest importance, for, once we grant the common origin of our fauna and flora with that of Eurasia, it is easy to understand why, after the Glacial Period, there should be a body of genera and species in our province similar to those of Europe, but more or less unlike those of Eastern Canada.

The comparison of climates involves a consideration of two points,—mean annual temperature, with special reference to range of temperature in winter and summer, and mean annual rainfall. The latter affects the dispersal of insects chiefly indirectly by limiting the range of their food-plants.

Now we shall see that the coast of British Columbia has a climate remarkably like that of the British Isles. The January temperature here—32 to 40 degrees—, corresponds with that of the east of Great Britain and that of central Europe, while eastern Canada is as cold as southern Greenland, Lapland and central Russia. On the other hand our July temperature is the same as that of the British Isles generally, but eastern Canada experiences the same heat as the south of France.

Our rainfall, as is only natural in a province of this size, varies enormously at different points; thus:—Princeton 5 inches, (dry belt); Victoria 31 inches; Vancouver 61 inches; Rivers Inlet 105 inches. In England the range is from 25 to 40 inches, except in the mountainous districts of the west, where 60 inches is not uncommon, and some places have a rainfall of over 100 inches annually.

These facts will explain why any plant growing in England can be readily acclimatised here; yet ivy cannot be made to grow in the East on account of the cold, and the holly will not flourish in California for lack of moisture.

OUR LIBRARY.

The following books have been presented to the Society by the Smithsonian Institution; they are in charge of Mr. Harvey, and may be inspected by members.

LEPIDOPTERA.

Catalogue of N. American Lepidoptera	Dyar	1902
Catalogue of N. America Noctuidae	Smith	1893
Synopsis of N. Am. Lepidoptera, Part 1	Morris	1862
Revision of Deltoid Moths	Smith	1895
Bibliography of described transformations of Lepidoptera	H. Edwards	1889
Revision of Agrotis	Smith	1890
New Noctuidae	Smith	1887
New Tineina from Florida	Busck	1900
Revision of the Gelechidae	Busck	1903
Revision of Depressaria	Busck	1902
Revision of the Cochlidiidae	Dyar	1905
New species of Euerythra and Callimorpha	Smith	1887
New Tortricidae from N. Carolina	Kearfott	1905

COLEOPTERA.

Catalogue of N. Am. Coleoptera	Melsheimer	1853
New Scarabaeidae	Linell	1896
Maternal Solicitude in Rhynchota	Kirkaldy	1904

DIPTERA.

Catalogue of N. Am. Diptera	Osten Sacken	1878
Catalogue of N. Am. Diptera	Aldrich	1906
Monographs of Diptera, Part 1	Loew	1862
Mosquitoes of California	Dyar	1907
Synopsis of the Syrphidae	Williston	1886
The so-called "Bugonia"	Osten Sacken	1894
New Diptera	Coquillett	1901
New Diptera	Coquillett	1902
Revision of the Empidae	Coquillett	1896

HYMENOPTERA.

Monograph of N. Am. Proctotrypidae	Ashmead	1893
New Ichneumonidae	Ashmead	1890
New Braconidae	Ashmead	1888
Bees and Flowers	Bouvier	1905
Psychical faculties of Ants	Forel	1904
Wing Venation of the Tenthredinoidae	MacGillivray	1906

ORTHOPTERA.

Catalogue of N. Am. Orthoptera	Scudder	1868
New Acridiidae	Bruner	1889
Revision of Trimerotropis	McNeill	1901
Two new Orthoptera	Caudell	1904
Orthoptera from Arizona	Caudell	1905

OTHER ORDERS, AND GENERAL PAPERS.

Directions for collecting Insects	Riley	1902
Directions for collecting Scale-insects	Cockerell	1892
Directions for collecting Dragon-flies	Needham	1899
Observations on Termites	Haviland	1902

And 38 other papers, mostly on Exotic Insects.

THE BRITISH COLUMBIA LIST

DIPTERA.—Family Asilidae.

The Robber-flies are rather large flies, with a long slender body. The head is hollowed out on top between the eyes, the face is usually bristly, and there is a strong pointed proboscis. These flies are very predaceous, feeding on other flies as well as bees, beetles and dragon-flies. Most of the larvae are also predaceous, but of little economic importance.

Scleropogon Loew

256 **helvolus Loew** ..... Victoria.

Stenopogon Loew

256 **inquinatus Loew** ..... Victoria, Vernon.
256 **modestus Loew** ..... Victoria, Cherry Ck., Similkameen.

Dicolonus Loew

258 **simplex Loew** ..... Victoria.

Dioctria Meig

259 **albius Walk** ..... Victoria, Wellington, Hope Mts.
259 **nitida Will** ..... Hope Mts. (Sherman).

Cyrtopogon Loew

259 **aurifex O.S.** ..... Victoria, Hope Mts.
259 **callipedilus Loew** ..... Victoria.
259 **dasyllioides Will** ..... Victoria, Kaslo.
260 **leucozona Loew** ..... Vernon (Venables).
260 **montanus Loew** ..... Vernon, Hope Mts.
260 **nebulo O.S.** ..... Vancouver, Vernon.
260 **positivus O.S.** ..... Port Renfrew.

Lasiopogon Loew (Daulopogon)

260 **bivittatus vittatus Loew** ..... Hope Mts. (Sherman).

Pycnopogon Loew

262 **sensilis Bigot** ..... Hope Mts. (Sherman).

Heteropogon Loew

263 **lautus Loew** ..... Wellington (Harvey).
263 **ludius Coq** ..... B. C. (Aldrich).

Pogonosoma Rond

269 **dorsatum Say** ..... Victoria, Goldstream, Shawnigan.

Dasyllis Loew

271 **astur O.S.** ..... gen. distributed.
271 **columbia Walk** ..... Vancouver Island (Aldrich).

Laphria Meig

272 **canis Will** ..... Hope Mts. (Sherman).
272 **ferox Will** ..... Vancouver, Kaslo.
272 **pubescens Will** ..... Vancouver, Hope Mts.
273 **vivax Will** ..... Kaslo (Cockle).
273 **vultur O.S.** ..... gen. distributed.

Proctacanthus Macq

274 **philadelphicus Macq (?)** ..... Vernon.

Erax Scopoli

278 **varipes Will** ..... Vernon.

Stilpnogaster Loew

auriannulatus Hine ..... Hope Mts.

SOME OF OUR NOCTUIDAE.

By R. V. Harvey.

1. **Xylomiges.**

This genus is remarkably well represented in British Columbia. Out of fifteen North American species we have certainly ten, if not eleven species, here.

They are among the earliest of the noctuids, and may be taken at sallow bloom in March, at cherry in April, and at lilac in May, besides flying freely to light. With the exception of X. patalis, which is in many respects abnormal, none of my specimens were caught later than May 11th.

Most of them have white secondaries, and there is generally a reddish tinge in or round the reniform spot. The male antennae are usually more or less pectinated, except in patalis.

1. **Xylomiges hiemalis Grote.** Thorax dark gray. Primaries brown, darker at the base; spots and lines distinct; orbicular spot open at the top, reniform reddish, Secondaries smoky-white, with a faint line, and distinct discal dot. This moth is generally distributed through the province, but I have not found it common.
2. **Xylomiges simplex Walker.** Thorax pale gray, with a black line on the collar, another down each side, and often a dorsal streak. Primaries pale bluish gray, spots and lines obsolete; a black streak from the mid-costa to the reniform; a sub-marginal row of black streaks between the veins. Reniform indistinct, tinged with yellow; secondaries white. Common everywhere.
3. **Xylomiges perlubens Grote.** Thorax dark gray. Primaries warm gray; a red flush round the reniform spot. Orbicular conspicuous, white, oval, upright. Secondaries nearly white. Generally distributed; common at cherry in 1906.
4. **Xylomiges rubrica Harvey.** Thorax buff to gray. Primaries buff, margin darker, a red flush round reniform. Orbicular conspicuous, narrow, oblique. Base of wing hardly darker, with a black streak. Secondaries yellowish white. Fairly common in most localities.
5. **Xylomiges pulchella Smith.** Much resembles rubrica, but has conspicuously darker markings. Base of primaries dark brown, contrasting. Heavy black marks round the spots; orbicular as in rubrica. These two species seem to intergrade to some extent. They are found in the same places, and are about equally common.
6. **Xylomiges candida Smith.** Thorax ash-gray, immaculate. Primaries ash-gray with black markings, especially in the middle. Spots faint; hardly a trace of red. Secondaries pure white. Seems to be common on the Island only.
7. **Xylomiges pallidior Smith.** Resembles simplex, but is more gray than blue; the markings are heavier, and the inner transverse line generally complete; little or no yellow in the reniform spot. Common everywhere.
8. **Xylomiges cognata Smith.** Thorax yellowish-white, black-powdered. Primaries yellowish-white, maculation brown, very distinct. A tinge of yellow gives the whole wing an olive appearance. Orbicular large, concolorous, blackringed. Secondaries yellowish-white. Recorded from Victoria.
9. **Xylomiges patalis Grote.** The smallest of our species (1 1¼ inches), and the only one with simple male antennae. Thorax blue-gray. Primaries blue-gray, median space darker, V-shaped, enclosing the spots, which are concolorous and often touching each other. Secondaries smoky, with broad, darker margin. Patalis is the last of the genus to make its appearance, not being on the wing till nearly June. It is generally distributed.
10. **Xylomiges dolosa Grote.** Recorded from Kaslo, but unknown to me. It is described as a dull lustreless black species, and seems to frequent high altitudes and mountainous regions.

BULLETIN

— OF THE —

British Columbia Entomological Society

EDITED BY R. V. HARVEY, M. A. VANCOUVER, B. C.

QUARTERLY JUNE, 1907 No. 6

NOTES OF BREEDING LEPIDOPTERA.

By J. W. Cockle, Kaslo, B. C.

Part 1—Eggs.

Many standard works have treated of breeding, but there is always scope for publication of facts which have come under the observation of individual collectors, and which may be of interest to others.

Breeders of insects are often confronted with little difficulties, which experience alone can overcome, and a record of such should prove of interest.

One of the first troubles that confronts the breeder is to secure ova from captive females;—in order to do this it is imperative to produce conditions similar to what the insect would find in its wild state, and some of the most striking which have come under observation may be mentioned.

The early-flying Geometers lay their eggs among the flower-buds of their food-plant, the young larvae in their initial stage feeding on the flowers, and when these fade they travel off to the adjacent leaves. A bunch of immature flower-buds introduced into the glass will often induce oviposition, when, if only the leaves are present the same insect will refuse to lay any eggs.

Another condition is found among the day-flying Sphingidae, which fly only in the heat of the sun. These insects when confined must be placed in direct sunlight, as they absolutely refuse to lay when placed even under a slight protective shade. I have confined Lepisesia and Hemaris in a glass cylinder placed in front of a plate-glass window, where the temperature would be over 120 degrees, and under these conditions they flew continuously and laid freely; but the passing of a thin vapoury cloud over the sun would cause them to settle immediately. As they, in common with most of the Sphingidae, oviposit only when on the wing, room must be provided for them to fly round easily. Direct sunlight must be provided to all moths which fly in the heat of the sun; Alypia, Albuna, and their allies are all subject to the same conditions.

Many moths which lay their eggs in the crevices of bark must be provided with cracks in the bark of their food-plant in which they can oviposit. **Erannis defoliaria** and probably many of the Catocalas and Synedas are among this group.

Those which lay their eggs in clusters round twigs, as in the case of **Pseudohazis shastaensis**, must be accommodated with the requisite twig and room.

The majority of the Noctuids and Bombycids will oviposit anywhere, and confining them in a glass jelly-tumbler is usually sufficient to ensure a batch of eggs, but when repeated trials fail in inducing them to lay, the breeder is confronted with the problem of inaugurating conditions similar to those which nature has decreed, and it is in such cases that the study of the habits of the insect and its natural environment may lead the student to a solution of the difficulty.

Another fact must be kept in mind, and that is to feed captive insects. The period of oviposition often lasts several days, and the moth in its natural state feeds between times. Food can be most readily provided by saturating a small ball of cotton in honey and water, which can be suspended by a string in the glass, or a piece of ripe fruit may be used for the same purpose.

Part 2 Will Deal With Food-plants and Feeding.

NOTES OF THE DISTRIBUTION OF INSECTS IN BRITISH COLUMBIA.

By R. V. Harvey.

Part III.

As I have already pointed out, the increase of warmth which marked the close of the Ice Age drove the exiled Arctic population back towards the North. But many individuals, indeed many entire species, found out that a cooler climate could be reached with much less trouble by an increase, not of latitude, but of altitude.

Accordingly many plants and insects spread slowly up the sides of the Rocky Mountains, driven upwards instead of northwards by constantly rising temperature and dryness of the plains below.

But at whatever height they found a congenial resting place, they would have to struggle for existence with the indigenous population, and many of them must have succumbed. Those, however, which have survived and propagated their kind into our own times, give us a remarkable proof of the truth of our theory of the dispersal of animals and plants as affected by the Glacial Period.

The most striking examples of this "stranding," as it is called, of species on mountain tops are found on the White Mountains of New Hampshire. Here many plants are identical with those of Labrador, but do not occur between the two places; while among the insects the distribution is most interesting and instructive. Dr. Scudder, in a paper published 1874, says: "In ascending Mt. Washington we pass, as it were, from New Hampshire to northern Labrador. On leaving the forests, we come first upon animals recalling those of the northern shores of the Gulf of St. Lawrence, and the coast of Labrador opposite Newfoundland; and when we have attained the summit we find insects which represent the fauna of Atlantic Labrador and the southern extremity of Greenland."

But there is another point about the insect fauna of Mt. Washington that is not so easily explained. It is now quite simple to find a reason for the resemblance between the insects of New Hampshire peaks and those of Labrador; but we must also find a reason for the fact that many Mt. Washington species are found either in Europe on the east, or in British Columbia in the extreme west, or in both these localities, without being found to any extent in the intervening country.

Let me take some concrete examples from the Order Diptera. In the family Syrphidae, as listed in Prof. Aldrich's catalogue of N. A. Diptera, there are, by my reckoning, forty-four species found on the White Mountains. Again, in the same list there are thirty-four European species given as found in North America. No less than twelve of the latter are found on Mt. Washington, while out of the whole sixty-six species from the two localities—Europe and White Mountains—forty-six, or 75 per cent., occur on the Pacific Coast. And it is to be borne in mind that very few indeed of these 46 are found right across the continent, as a glance at the catalogue will show. In the genus Syrphus, of eight species occuring on Mt. Washington, seven are British Columbia species, and the other is found in Alaska. Of our common Lasiophthicus pyrastri Baron von Osten Sacken said, in 1877: "It has never been found east of the Mississippi. The question how it got to these (western) regions is an interesting problem."

The species in question is found in Europe and the Pacific States.

In the same paper, entitled "Western Diptera," the author has some interesting remarks on resemblances between the Western fauna and the fauna of Northern and Central Europe, the species being foreign to the fauna of the Eastern United States, and, to quote his own words, "they are the more strange, as, far from being favored by any similitude of meteoric or botanic conditions, they seem to exist in spite of differences in these conditions. He is here speaking of California, whereas in British Columbia, the metoric and botanic conditions are assuredly similar in a marked degree to those of Europe. I append some examples given by Osten Sacken, and a few which have come under my own notice:—

LEPIDOPTERA.

Genus **Parnassius**: Sweden, Alps, British Columbia and Rockies (not east of Mississippi).

Papilio machaon: Europe, almost same as P. zolicaon, British Columbia and California.

Brenthis chariclea: Lapland, Greenland, Labrador, British Columbia mountains.

Brenthis freija: Siberia, Norway, Labrador, British Columbia mountains.

Pamphila mandan: Europe, White Mountains, British Columbia.

Plusia gamma: Europe, nearly same as P. californica of the west coast.

Anarta melanopa: Europe, Arctic America, British Columbia mountains.

Carsia paludata: Europe, Arctic America, British Columbia mountains.

Mesoleuca silaceata: Europe, Montana, British Columbia.

DIPTERA.

Genus **Silvius (Tabanidae)**: Europe, Western States (not east of Mississippi).

Genus **Elliptera (Tipulidae)**: Europe, California (not eastern).

NEUROPTERA.

Genus **Rhaphidia**: Europe, California (not in Atlantic States).

ORTHOPTERA.

Genus **Locusta**: Europe, Western region (not in Atlantic States).

(To be concluded.)

CORRESPONDENCE.

Central Experimental Farm, Ottawa, April 25, 1907.

Dear Mr. Harvey:—

I have just received your most interesting Quarterly, Part No. 5, and have read with much pleasure your notes on the distribution of insects in British Columbia. I am moved, however, to write to you in reference to a statement in your second line, viz.: that your members "will doubtless now have their setting boards in full swing."

Now as a matter of fact I wonder if your members do really swing their setting boards, or know what an excellent plan that is to keep off the attacks of some of the entomologists' worst enemies, museum pests and mice, while specimens are drying on the boards? Mr. Arthur Gibson, my assistant, taught me one of the best "dodges" I know of for this purpose, and it simply consists of screwing into one end of your setting boards a little hook by which the board, when covered with mounted specimens, may be hung up against the wall out of the way of harm by the above pests and many accidents. The details of how the board is hung, or what it is hung to, may of course be changed according to convenience, but the main idea that they should be swung up out of the way I have found of very great value, and think possibly it may also be a suggestion which will be acceptable to some of your readers. With kindest regards,

Yours very truly,

JAMES FLETCHER.

Smithsonian Institute, United States National Museum.
Washington, D. C., April 29, 1907.

My Dear Sir:—

I noted the remarks on Xylomiges by you in the Bull. B. C. Ent. Soc., which you kindly sent me, and am stimulated to send you some notes on them, which you are at liberty to publish if you should care to.

Sir George Hampson has lately (1905) classified these species under the new genus **Xylomania**, proposed by him. He makes four divisions, as follows:

1. Male Antennae, pectinate, including the species **behrensiana, erythrolita** and **hiemalis.**
2. Male Antennae, with short branches, tip simple. Species: **pallidior, peritalis** and **cognata.**
3. Male Antennae, serrate fasciculate. Species: **rubrica, simplex, indurata, curialis, candida, dolosa** and **perlubens.**
4. Male Antennae, ciliated. Species: **pulchella, alternane** and **patalis.**

Now there appear to be two errors in this (excluding **peritalis** and **alternans,** of which I have no specimens), namely **rubrica** and **simplex. Rubrica** has the antennae ciliate, and should fall with **pulchella,** as you rightly place it. The two are probably varieties of one species. Hampson's error was probably due to his having only female specimens before him in this case. **Simplex** has the antennae with short branches, and should fall with **pallidior.** How Hampson came to place it as he did I cannot see, since he figures the male antennae showing the short branches. The structure is peculiar, the pectinations being on one side only, the other side being serrate fasciculate; but the same structure obtains in **pallidior** and **cognata,** so it ought not to have caused trouble.

The B. C. species should be listed as follows:

Genus, **Xylomania Hampson.**

1. **hiemalis Grote.**
2. **simplex Walker, pallidior Smith, cognata Smith.**
3. **caudida Smith, dolosa Grote, perlubens Grote.**
4. **rubrica Harvey, pulchella Smith, patalis Grote.**

I wish some one of your Society would raise and compare the larvae of these species. Eggs could be obtained in spring, and the larvae easily fed, no doubt.

Very truly yours,

Harrison G. Dyar.

THE BRITISH COLUMBIA LIST

Coleoptera. Family Cerambycidae.

The "Long-horns" are remarkably well represented in this Province probably exceeding in number of species any other family of our beetles. This is accounted for by the fact that the larvae are most all wood-borers; they live chiefly in the heartwood, few of them boring in the sap-wood of living trees. Though very destructive to shade-trees in the East, few of our species can be classed as serious pests. The Western species seem to be very distinct from the Eastern, as is evidenced by the fact that of all the species recorded in this list only four are recorded in New Jersey lists. (The numbers are from Henshaw's List).

Ergates Serv.
5950 spiculatus Lec. ..... Wellington, Vancouver, Vernon

Prionus Geoff.
5961 californicus Mots ..... Victoria

Tragosoma Serv.
5967 harrisii Lec. ..... Vernon

Asemum Esch.
5970 atrum Esch ..... Island; Lower Mainland; Queen Charlotte Island

Nothorhina Redt.
5973 aspera Lec. ..... British Columbia

Criocephalus Muls.
5974 productus Lec. ..... Victoria, Vancouver
5976 asperatus Lec. ..... Victoria, Vancouver
5979 nubilus Lec.

Tethropium Kby.
5981 velutinum Lec. ..... Wellington; Vancouver
5982 cinnamopterum Kby ..... Wellington

Opsimus Thom.
5983 quadrilineatus Mann ..... Victoria, Queen Charlotte Island

Hyloptrupes Serv.
5992 ligneus Fab. ..... Island, Lower Mainland, Vernon

Phymatodes Muls.
5995 thoracicus Muls ..... British Columbia
6002 dimidiatus Kby. ..... Harrison River
6003 vulneratus Lec.
6005 decussatus Lec. ..... Victoria
6006 nitidus Lec. ..... Victoria, Wellington

Merium Kby.
6007 proteus Kby.

Callidium Fab.
6009 janthinum Lec. ..... British Columbia
6013 vile Lec. ..... Victoria

Eumichthvs Lec.
6089 oedipus Lec. ..... Wellington

Molorchus Fab.
6099 longicollis Lec. ..... Wellington

Rosalia Serv.
6113 funebris Mots ..... Island; Lower Mainland

Callichroma Latr.
6117 melancholicum Chev ..... Victoria

Clytus Laich.
6117 marginicollis Lap ..... Wellington

Xylotrechus Chev.
6183 undulatus Say ..... Island; Lower Mainland; Vernon
6184 annosus Say ..... Harrison River; Vernon
6189 planifrons Les ..... Wellington
6185 nauticus Mann
6190 obliteratus Lec. ..... Victoria, Wellington

Neoclytus Thom.
6197 conjunctus Lec. ..... "B. C."

Clytanthus Thom.
6207 ruricola Oliv ..... "B. C."

Atimia Hald.
6219 dorsalis Lec. ..... Vancouver

Desmocerus Serv.
6223 cribripennis Horn ..... Harrison R., Vancouver, Chilliwack

Necydalis Linn.
laevicollis Les. ..... Victoria, Wellington, Vancouver

Pyrotrichus Lec.
6229 vitticollis Lec. ..... Victoria

Leptalia Lec.
6230 macilenta Mann ..... "B. C."

Rhagium Fab.
6232 lineatum Oliv. ..... Wellington; Lower Mainland; Queen Charlotte Is.

Toxotus Serv.
6239 flavolineatus Lec. ..... Shawnigan, Hope Mts.
6240 vettiger Rond ..... Vancouver(?)
6244 vestitus Hald ..... Victoria, Goldstream
6246 obtusus Lec. ..... Vernon

Pachyta Serv.
6247 monticola Rond.
6248 liturata Kby.
6249 armata Lec. ..... Mt. Crown; Mt. Cheam; Hope Mts.
6251 spurca Lec. ..... Victoria

Anthophilax Lec.
6255 mirificus Bland ..... Vernon

Acmaeops Lec.
6260 atra Lec ..... Vernon
6266 subpilosa ..... Vernon
6267 longicornis Kby. ..... Vernon
6269 ligata Lec. ..... Vernon
6274 pratensis Laich ..... Victoria; Hope Mts.; Sililkameen; Vernon

Gaurotes Lec.
6278 cressoni Bland ..... Harrison River; Vernon

Leptura, Serv.
6299 obliterata Hald ..... Generally distributed
6300 soror Lec ..... Victoria
6301 propinqua Bland ..... Victoria
6316 subargentata Kby. ..... Victoria, Hope Mts.
6318 laeta Lec ..... Victoria
6323 instabilis Hald ..... Hope Mts., Similkameen
a convexa Lec ..... Vernon
6324 sexmaculata Linn ..... Similkameen
6327 matthewsi ..... Vernon
6332 canadensis Fab ..... Victoria, Vernon
var. a. erythroptera Kby ..... Victoria, Vernon, New Westminster
var. b. cribripennis Lec ..... Vancouver Island
6336 dehiscens Lec ..... Wellington, Vancouver, Hope Mts.
6337 sanguinea Lec ..... Vancouver Island, Vernon
6338 laetifica Lec ..... Victoria, Wellington, etc.
6339 hirtella Lec ..... Vernon
6340 quadrillum Lec ..... Victoria, Goldstream, Vancouver
6341 chrysocoma Kby ..... Generally distributed
6344 proxima Say ..... "B. C."
6346 dolorsa Lec ..... Generally distributed
6348 crassipes Lec ..... Generally distributed
6349 tibialis Lec ..... Queen Charlotte Is., Cheam, Hope Mts.
6350 behrensii Lec ..... "B. C."
6351 octonotata Say ..... "B. C."
6353 vittata Germ ..... "B. C."
6356 vibex Newn ..... "B. C."
6358 scripta Lec ..... Victoria, Wellington, Vernon, Hope Mts.
6360 valida Lec ..... Chilliwack
6363 aspera Lec ..... Wellington, Vernon, Similkameen
serpentina Cas ..... Shawnigan, Similkameen

Plectrura Mann.
6367 spinicauda Mann ..... Queen Charlotte Is., Victoria

Monohammus Serv.
6386 maculosus Hald ..... Victoria
6387 scutellatus Say ..... Generally distributed
6388 confusor Kby ..... "B. C."

Synaphoeta Thom.
6403 guexi Lec ..... Victoria

Acanthocinus Steph.
6446 obliquus Lec. ..... Wellington, New Westminster
6447 spectabilis Lec ..... New Westminster

Pogonocherus Latr.
6453 mixtus Hald ..... Vancouver Island

Saperda Fab.
6478 calcarata Say ..... Vancouver Island
var. a. adspersa Lec ..... Victoria
6483 vestita Say ..... "B. C."
6485 tridentata Oliv ..... "B. C."
6488 moesta Lec ..... Harrison

Oberea Muls.
6497 **quadricallosa Lec** ..... Wellington, Sicamous

Tetrops Steph.
6508 **monostigma Hald** ..... "B. C."

Tetraopes Serv.
6511 **tetraophthalmus Forst** ..... "B. C."
6513 **femoratus Lec** ..... "B. C."
var. c. oregonensis Lec ..... Vernon, Kamloops

ADDITIONAL NEUROPTEROID INSECTS

The following species were recently determined for Mr. Harvey by the kindness of Professor Nathan Banks. Most of them are new to our list.

Order Plecoptera. Family Perlidae.
Perla ebria Hagen ..... Nicolum River, July, 1906
Perlodes signata Hagen ..... Quamichan Lake, April, 1907
Pteronarcys californica Newp ..... Vancouver, 1906

Order Trichoptera. Family Phryganeidae.
Neuronia concatenata Walk ..... Quamichan Lake

Family Limnephilidae.
Homophylax flavipennis Banks ..... Nicolum River, July, 1906
Chilostigma alascensis Banks ..... Vancouver, March, 1907
Glyphopsyche bryanti Banks ..... Victoria, April, 1907

Order Neuroptera. Family Rhaphidiidae.
Rhaphidia oblita Hagen ..... Hope Mts., July, 1906

(Family not stated).
Acroneuria pacifica Banks ..... Nicolum River, July, 1906
Arsapnia grandis Banks ..... Vancouver, April, 1907

ADDITIONAL SPECIES OF LEPIDOPTERA

(Dyar's number).
1345 **Oncocnemis glennyi Grt** ..... Vernon (Bush)
1477 **Noctua esurialis Grt** ..... Vancouver (Bush), July 20
1560 **Pronoctua typica Smith** ..... Kaslo, Sept. 9 (Cockle)
1697 **Paragrotis dissona Moschl** ..... Field, July 25 (Bush)
1721 **Paragrotis furtivus Smith** ..... Vancouver, July 11 (Bush)
Fishia exhilarata Smith ..... Kaslo, Oct. 10 (Cockle)
Gortyna pallescens Smith ..... Kaslo, Aug. 25 (Cockle)
2781 **Syneda graphica Hubn** ..... Hope Mts., July 17 (Harvey)
5298 **Carpocapsa toreuta Grt** ..... "Interior of B. C." (J. R. Anderson)

The following Micro-lepidoptera were named for Mr. E. P. Venables by the kindness of Mr. W. D. Kearfott.

4454 **Pyrausta insequalis Guen** ..... Vernon (Venables)
4962 **Pterophorus homodactylus Walk** ..... ib. id.
Clethreutes galaxana Kearf ..... ib. id. (Metatype)
5524 **Choreutis sliphiella Grt (var.)** ..... ib. id.
Laspeyresia prosperana Kearf ..... ib. id. (Metatype)
5897 **Ethmia albistrigella Wism** ..... ib. id.

BULLETIN

— OF THE —

British Columbia Entomological Society

EDITED BY R. V. HARVEY, M. A. VANCOUVER, B. C.

QUARTERLY SEPTEMBER, 1907 No. 7

(Continued from last Issue.)

BRITISH COLUMBIAN FLEAS.

There is in the possession of the President of our branch a copy of a Monograph of the Fleas of the World, written by Professor C. F. Baker, and published in the Proceedings of the U. S. National Museum.

It is a very complete work of 107 pages, illustrated with 17 plates, and in it are listed 135 species, arranged in five families grouped together in the order, Siphonaptera, or, as we used to call it, following Kirby & Spence and Westwood, the Aphaniptera.

The first four families of the order are very small, containing only five species in all, and none of these are British Columbian, or likely to be found here.

The fifth family is styled Pulicidae, and six species out of the 130 seem to be members of our fauna. These are:—

1. **Pulex irritans Linn.**
2. **Ctenocephalus canis Curtis.** (On dogs and cats).
3. **Ceratophyllus gallinae Schrank.** (On poultry).
4. **C. charlottensis Baker.** (In a mouse nest).
5. **C. keeni Baker.** (On Peromyscus keeni).
6. **C. perpinnatus Baker.**

The last three were all discovered by the very energetic entomologist, the Rev. J. H. Keen, Church of England Missionary, formerly of Masset, Q.C.I., and now residing at Metlakatla.

NOTES ON BREEDING LEPIDOPTERA.

By J. W. Cockle, Kaslo, B. C.

Part II. Larvae.

Upon the emergence of the young larva the first requisite is to provide them with food, and where the food-plant is unknown this often proves difficult. The usual method is to introduce a variety of leaves into the breeding-jar, trusting in this way to find something that they will eat. If after the lapse of a few hours the larvae have refused to eat what has been offered, another lot of leaves should be introduced,—anything that suggests itself as likely should be tried. Trouble of this nature may often be avoided if the eggs are obtained from a female that was captured by beating. It will be found an almost invariable rule that when a moth is ovipositing it will rest on or near the food-plant, and a record of the plant or trees from which the parent was dislodged should always be kept.

Great care must be used in changing very young larvae from a faded leaf to a fresh one; if they are not readily removable with a camel-hair brush, it is advisable to place another leaf over them until the next day, when the few remaining on the old leaf may be picked off; or a small piece of leaf to which the abdominal props are attached may be cut away and removed with the larva. Observation as to the stages of moulting should be carefully noted, as this is a very critical time with larvae, and any disturbance of them after they have attached themselves for shedding their skin is likely to result in their death.

In feeding broods of noctuid larvae, which will usually eat anything, preference should be given to the less juicy foliage, because they will be more easily kept clean, and be less subject to fungoid diseases.

When large broods are desired the bag method,—of placing the brood on a limb of the food-plant—is preferable to attempting to feed them in confinement, but a few of the same brood may be kept in jars for examination.

In dealing with wild larvae, any that are solitary in their habits must be kept in separate jars or boxes, as they are liable to become cannibals if kept together, and a cannibal larva rarely reaches maturity.

The care of hibernating larvae is the hardest task of the breeder, so little is known of the conditions favorable to their safety. The best success I have had in dealing with these larvae has been to place them in a box of straw, and then place the box out of doors in a moderately dry place. Do not disturb them in the spring until their food-plant is well grown and the weather is warm.

Amongst the curious instances of food-plants are recorded cases where the young larvae refused to eat fresh green leaves, but subsequently ate the same leaves after they had withered; this would denote that they eat the damp fallen leaves under the trees.

Referring to Dr. Dyar's request in the June Bulletin for breeding notes on **Xylomania**—I find that my notes on **X. rubrica** give wild cherry and aspen poplar as the food-plant of this species. This should form a key to the probable food-plants of other members of this family.

NOTES ON THE DISTRIBUTION OF INSECTS IN BRITISH COLUMBIA.

By R. V. Harvey.

(Conclusion.)

In the last issue I selected the Dipterous Family Syrphidae to illustrate the peculiar relationship which exists between the insect fauna of the White Mountains of New Hampshire and that of Europe on the one hand and British Columbia on the other.

It is only fair to add that this relationship is by no means so well marked in other families of this order. To take only those families of which lists have been published in this Bulletin: In the Asilidae only five of our species seem to be found in the East, but three of these occur on the White Mountains; in the Bombyliidae about 50 per cent. of our species are generally distributed over the continent of North America; the rest are confined to the Pacific slope; in the Tachinidae no less than 80 per cent. are also Eastern species; of our Tabanidae about 30 per cent. are either Eastern or Arctic species.

Now while the distribution east and west seems to point to a common origin of the fauna of North America in a circumpolar region of pre-glacial times, the facts of their distribution north and south are susceptible of the same explanation. To begin with, the affinities of our fauna with that of Alaska are most noteworthy, and those of our butterflies which are common to the Western United States are there found to be usually alpine in their habitat. The following are mountain species in California and Colorado: **Vanessa californica, V. milberti, Thecia californica, Pamphila mandan,** and **Erynnnis manitoba,** most of which occur at altitudes of four to eight thousand feet in those states, as recorded by Mr. Greenwood Wright.

But perhaps the most notable examples of species occurring at higher altitudes as they range south are to be found among the Bombidae, or Humble-Bees. The report of Dr. W. H. Ashmead on the Harriman Alaska expedition of 1899 contains some interesting facts bearing on our subject. He notes a general affinity between the Alaskan species and those of Eurasia on the one hand and of British Columbia and Washington on the other. Of seventeen species of Bombus recorded by him, no less than ten are known to occur in British Columbia. Only four are noted as found in the United States, and the distribution of these is instructive: 1. **Bombus nevadensis** occurs in the interior plateau of British Columbia, but is alpine in Nevada, Utah and Colorado; 2. **Bombus sitkensis** flies at sea-level in British Columbia, but in Colorado and New Hampshire must be sought on the highest peaks; 3. **Bombus frigidus** is said to fly throughout British Columbia (Ashmead), but is a mountain species in Colorado and New Mexico; 4. **Bombus nearcticus** ranges from the mountains of British Columbia to those of Idaho and California.

Let us now consider more closely the distribution of the insects within the limits of our own province. The physical features of the country, the north and south trend of the chief mountain ranges, divide the province up into four well-marked regions, differing to a considerable degree in climate and surface. First we have Vancouver Island, or rather the southern portion of it, where the climate is very mild and fairly dry; second, the Lower Mainland, which should include the north end of the Island and all the coast west of the Cascade Mountains. This is the rainy region, where the vegetation is very dense; it contains the best timber in the province; third, the Dry Belt, comprising the districts round Kamloops, the Okanagan, Similkameen and Boundary country, characterized by a very low rainfall and colder winter; fourth, the Kootenays and Rocky Mountains region.

The last named region seems to be the richest in insects, while the heavily timbered Lower Mainland is the poorest. The first two agree in the general aspect of the fauna, and the last two also show many points of similarity.

But the point I wish to emphasize is not the similarity, but the dissimilarity between these four regions. Let me take a few concrete examples.

Parnassius clodius is a coast species ranging commonly up to Mount Cheam, where it overlaps the range of its congener **P. smintheus,** the inland species. **Clodius** has, however, been recorded as far east as Greenwood, in the Boundary district, while **smintheus** is found near latitude 57 on the Stikine River, nearer the coast.

Papilion daunus seems to be confined to the Dry Belt, and **oregonia** is not found on the coast. **Lemonias cooperi** and **whitneyi** range from Victoria up to the confines of the Dry Belt, where their places are taken by **L. palla** and **L. macglashani.**

Phyciodes mylitta is limited to the Lower Mainland, and in the interior is represented by **P. barnesii.**

Eugonia j-album is apparently absent on the Island, and **Polygonia silenus** has not been recorded from the interior as yet.

Coenonympha ampelos is abundant around Victoria, absent in the Lower Mainland, but reappearing again in Similkameen with slight varietal differences.

Oeneis gigas is common on the Island, where it is not (pace Mr. Greenwood Wright), confined to "bare rocky knobs" in that "inhospitable locality"! It has been taken on Grouse Mountain, near Vancouver, at 4000 feet, but in the Cascades and further east we take only its near ally **O. chryxus.**

When we look at the range of these same species in the States to the south of us, we find no such well-marked regions; species like **P. clodius, P. smintheus** and **Phyciodes mylitta** are found from the coast to the Rockies.

Now while these cases, and, many others that might be added, may be fairly well accounted for by the theory of (1) a common circumpolar origin, (2) a southward migration in the glacial period, followed by (3) a return northward at the close of that period, still there are whole series of facts in distribution which seem to conflict with it. Some of these facts have been already alluded to above, and others will no doubt occur to those who have made special studies in orders not referred to in this paper. I think, however, that the array of facts bearing out the approximate truth of this theory will outweight those which at first sight seem to be to some extent against it.

THE B. C. LEPIDOPTERA LIST.

(Additions.)

34	**Pontia sisymbri Bdv.**	Kaslo
70b	**Eurymus alexandra, var emilia Edw.**	Kaslo and Boundary
159	**Lemonias editha Bdv.**	Boundary
370	**Callipsyche behrii Edw.**	Boundary
526	**Polites peckius Kby.**	Kaslo; one specimen
	Fishea yosemitae	Kaslo
	Fishea exhilarata	Kaslo
1520	**Chorizagrotis sorer Smith**	Kaslo
1686	**Paragrotis numa Strecker**	Kaslo
	Paragrotis quinto Smith (M. S.)	
1965	**Heliophila diffusa Walker**	Kaslo
1983	**Heliophila calgariana Smith**	Kaslo
	(Note.—The coast species formerly going under this name in our collections is **H. roseola Smith**).	
	Perigrapha achsha	Kaslo; one specimen
	Orthosia acta Smith (ms)	Kaslo
2504	**Autographa v-alba Ottol**	Kaslo

LOCALITY NOTES.

193 **Phyciodes mylitta Edw** has been recorded from the Boundary district.
401 **Chalceria snowii Edw** is an alpine species.
404 **Cupido heteronea Bdv;** Okanagan and Boundary; not Kaslo.
728 **Marumba modesta Harr;** from Kaslo and Nelson.
881b **Apantesis ornata, var ochracea Stretch;** from Kaslo.
2479a **Euchalcia festucae, var putnami Grote** occurs as far west as Vernon.

SOME OF OUR NOCTUIDAE.

By R. V. Harvey.

No. 2.—Plusia, and allied genera.

The species formerly grouped under this name have been rearranged, and the genus subdivided recently by Dr. Dyar, whose arrangement has been accepted by Dr. Ottolengui, of New York, who has made a special study of this group.

The old genus Plusia is now divided into six genera, four of which are represented in British Columbia, namely—Plusia (2 species); Euchalcia (1 species); Eosphoropteryx (1 species); Autographa (17 species).

These four genera are separated as follows:—

Plusia has short palpi; the fore-wings decidedly falcate, with a distinct tooth at the anal angle.

Euchalcia has the fore-wings not falcate, and scarely any tooth at the anal angle.

Eosphoropteryx has long palpi and narrow wings, with a tooth at the anal angle.

Autographa has the fore-wings not falcate; the outer margin scalloped, and a moderate tooth at the anal angle.

Genus **Plusia. Hubner.**

1. **aereoides Grote.** The fore-wings are almost uniform golden-brown, tending towards pinkish at the outer margin; the Y-mark is absent, but the cross-lines are distinct, the outer line being bright golden.
   Not common; recorded from Wellington, Agassiz and Kaslo.
2. **metallica Grote** (scapularis H. Edw.) Much larger than the last; the fore-wings are golden-brown, with a subapical buff patch and buff outer margin. The mark is roughly crescentic, large, silvery and solid; below it is a patch of golden-brown. Fresh specimens have a brilliant metallic sheen.
   Generally distributed, but not common.

Genus **Euchalcia. Hubner.**

putnami Grote. This is considered by many to be the American race of the European festucae, which it strongly resembles. Its popular name is the "Gold spot," and it is one of the most brilliant of our species. The head and collar are orange, the thorax purplish. Fore-wings purplish; and orange costal patch near base; a golden metallic subapical streak. The Y-mark is large, oblique, sometimes broken in two, the upper half always solid. Below is a quadrate orange-yellow patch with metallic sheen.
Common on the Coast; recorded from Nanaimo.

Genus **Eosphoropteryx Dyar.**

thyatiroides Guenee. Thorax thickly tufted; wings slightly pointed. Fore-wings greenish-grey, suffused in places with pink; a pink blotch at base. Y-mark distinct, silvery, broken.
Mission, Wellington; rare.

Genus **Autographa Hubner.**

1. **mappa Grote & Robinson.** Ground color dull pink with brown shades and brown cross-lines, picked out with black. Y-mark golden, broken; upper half a wide V, lower nearly circular.
   Fairly common on the coast; recorded from Sandon and Kaslo.
2. **flagellum Walker.** A northern species, which seems to be found throughout Canada; figured in Holland's Moth Book.
   Recorded from Kaslo. (1 specimen).
3. **pseudogamma Grote.** Closely allied to the next species, but the ground color is pure grey, without a trace of blue; darker markings rich brown.
   Kaslo, Hope Mountains, Stikine River.
4. **californica Speyer.** Our commonest species; a large insect with pointed wings; ground color blue-grey, with brown shades. Y-mark silvery, unbroken as a rule, oblique.
   A day-flying species, common everywhere.
5. **brassicae Riley.** A very injurious species, known as the Cabbage Looper; common throughout North America; figured in Holland's Moth Book and many other works.
   Kaslo.
6. **rectangula Kirby.** A small species, grayish in ground color, with all lines and shading sepia-brown. Medium shade dark, sharply defined by white lines. Y-mark large, unsilvered as a rule, very variable and often fantastic in outline. No anal tooth.
   Generally distributed, but not common.
7. **uaureum Guenee.** A doubtful record, received from the Interior.
8. **vaccinii H. Edw.** An eastern species, figured in Holland's Moth Book; may be distinguished by the heavily checkered fringe of the fore-wings. This name, with **celsa** and **octoscripta,** may refer to one species.
   Kaslo.
9. **selecta Walk (viridisignata Grote).** A large species with pointed wings. Ground color an almost uniform blue-grey; Y-mark of a peculiar greenish-golden hue. Anal tooth large.
   Vancouver Island; Kaslo; Hope Mountains.
10. **octoscripta Grote.** A small species, blue-grey suffused with brown; lines distinct, mostly double. Y-mark stumpy, unsilvered, unbroken, the lower half round with a dot in the middle. This species seems to have been going under the name of **celsa H. Edw.,** in some of our collections and there may be some confusion between the two.
    Island and Lower Mainland; not common.
11. **epigaea Grote.** A fairly large species, uniform light grey. Y-mark slender, silvery, inconspicuous; below is a dark brown blotch, fading into the ground color on the inner margin. Anal tooth large.
    Generally distributed.

(To be continued.)

BULLETIN

— OF THE —

British Columbia Entomological Society

EDITED BY R. V. HARVEY, M. A. VICTORIA, B. C.

QUARTERLY DECEMBER, 1907 No. 8

OBITUARY.

We have to record with the deepest regret the loss which our branch has sustained by the death in December last of Mr. Clermont Livingstone, of Duncans, an entomologist whose work was well-known and appreciated before ever our Society came into existence. We desire to extend our hearty sympathy to his family.

PROSPECTS AND PLANS FOR 1908.

The Hon. Secretary of the branch wishes to notify the members and his friends elsewhere that his address in future is The Queen's School, 1157 Belcher Street, Victoria, B. C.

Professor Raymond Osburn of the Columbia University, New York, has prepared a supplementary list of the Syrphidae of British Columbia. It is to Professor Osburn that we owe our knowledge of this interesting family of Diptera, in which our province is so rich. In 1904 he published in the Canadian Entomologist a list of 78 species of Syrphidae from B. C., and to this his forthcoming paper will add another fifty names. Six of these will be new species; two Syrphus, two Sphecomyia, an Arctophila and a Xanthogramma. He also intends to read a paper on the Syrphidae of British Columbia at an important entomological meeting.

Professor Herbert Smith, of New York, has in hand a collection of British Columbian Ichneumonidae, among which he expects to find some interesting forms. We hope that some of our collectors will take up the study of the Hymenoptera systematically this season, for it has too long been neglected, and other orders are making a much better showing in our lists.

THE SYRPHIDAE OF BRITISH COLUMBIA.

By Professor R. C. Osburn, Columbia University, New York.

The following is a list of all the species known to British Columbia, together with the localities in which each species has been taken, and the seasonal distribution as far as known. In the case of most of the species such a record is merely an expression of our ignorance in regard to the distribution, but it will at least serve as a point of attack for future workers, and especially for the local entomologists of British Columbia, for whom this report is intended. It is hoped that many of the gaps in our knowledge of the distribution of this family of flies may be filled in ere long by careful and systematic collecting.

The fauna of British Columbia is very rich in this group, which is easily distinguished from all other Diptera by the presence of the so-called "bastard" or false vein. This is a thickening of the membrane of the wing simulating a vein, and running lengthwise between the third and fourth veins of the wing; it is usually well marked and easily recognized.

Most of the species of this family are bright-colored and many of them cross-banded or otherwise marked with yellow or metallic; they are to be found around flowers or resting on leaves in the sunshine. Some of them are fine examples of protective mimicry and are easily mistaken for bees of various sorts. In size they range from nearly an inch in length to less than one-fifth of an inch; some are smooth and others are densely hairy, but all agree in the character of the venation mentioned.

List of British Columbian Syrphidae.

Microdon tristic Loew—Kaslo, June 5.
form cothurnatus Big—Victoria (?)
viridis Towns—Ainsworth, Vancouver, June 11 to July --
memoratus Big—Vernon, Aug. 14.

Chrysotoxum derivatum Walk—Glacier, Cheam, July 20 to Aug. 10.
ypsilon Will—Kaslo, June 5.

Paragus bicolor Fabr.—Vernon, Victoria (?), April 27 to July 13.
tibialis Fall—Agassiz, Similkameen, July 18 to 21.

Pipiza pisticoides Will—Kaslo, June 12 to July 30.
nigripilosa Will—Vancouver, June 21.
quadrimaculata Panz—Vancouver, July 2.

Chilosia lasiophthalma Will—Vancouver, Wellington, April 1 to 30.
chalybescens Will—Grouse Mountain, July 1.
occidentalis Will—Hope Mountains, Vancouver, June 22 to July 24.
hoodiana Big—Similkameen, July 20.
willistoni Snow—Port Renfrew, Bear Lake, Glacier, July 5 to 20.
alaskensis Hunter—Port Renfrew, Vancouver, Glacier, May 8 to July 20.
pallipes Loew—Glacier, Similkameen, Goldstream, July 19 to Aug. 20.
tristis Loew—Port Renfrew, Goldstream, Vancouver, Similkameen, Field, Kaslo, June 10 to Sept. 24.
pulchripes Loew—Field, July 19.
plutonia Hunt—Port Renfrew, July 5.
nigripennis Will—Port Renfrew, Vancouver, May 27 to July 29.
plumosa Coq—Glacier, Aug. 20.
cyanea Hunter—Port Renfrew, July 5.
sp—Hope Mountains and Similkameen, July 20.
sp—Field, July 18.

Melanostoma mellinum Linn—Renfrew, Victoria, Agassiz, Kaslo, Vernon, Ainsworth, Wellington, April 15 to Aug. 19.
angustatum Will—Renfrew, Victoria, Vancouver, Grouse Mt., Wellington, Agassiz, Hope Mts., Glacier and Field, Apr. 10 to Aug. 16.
stegnum Say—Vernon, Vancouver, April 22 to May 1.
caerulescens Will—Kaslo, July 2.
trichopus Thomson—Vancouver, Hope, July 7 to 14.

Pyrophaena ocymi Fabr.—Port Renfrew, July 6.

Platychirus quadratus Say—Vancouver, June 2.
hyperboreus Staeg—Vancouver, Vernon, Kaslo, Wellington, April 15 to Aug. 15.
chaetopodus Will—Victoria, July 7.
peltatus Meig—Glacier, Mt. Cheam, Vernon, Vancouver, May 9 to Aug. 18.
tenebrosus Coq—Port Renfrew, July 5 to Aug. 16.
albimanus Fabr.—Port Renfrew, Bear Lake, Field, June 29 to July 18.

Leucozona lucorum Linn—Mt. Cheam, Aug. 5.

Scaeva (Catabomba) pyrastri Linn—Renfrew, Vancouver, Kaslo, Bear Lake, Glacier, Goldstream, April 7 to Aug. 20.

Eupeodes volucris O. S.—Victoria, Goldstream, Vancouver, Kaslo, Agassiz, May 6 to July 20.

Syrphus arcuatus Fall—Renfrew, Victoria, Wellington, Cheam, Kaslo, Field, April 15 to Aug. 18.
amalopis O. S.—Victoria (?), Kaslo, June 15.
intrudens O. S.—Renfrew, Victoria, Vancouver, Hope, Cheam, April 30 to Aug. 9.
contumax O. S.—Grouse Mt., Bear Lake, S. Fork Creek, Kaslo, July 19 to Aug. 29.
mentalis Will—Renfrew, Vancouver, Wellington, Glacier, March 9 to July 20.
disjectus Will—Vancouver, Hope Mountains, July 18 to 20.
velutinus Will—Mount Cheam, Aug. 9.
pauxillus Will—Victoria (?), Vancouver, Grouse Mt., April 15 to July 19.
umbellatarum Schiner—Victoria, Glacier, Hope Mts., July 19 to Aug. 18.
glacialis Johnson—Vancouver, Mission, Hope Mts., March 9 to July 19.
macularis Zett—Port Renfrew, Victoria, June 22 to July 20.
conjunctus Osburn—Hope, July 14.
geniculatus Macq—Vancouver, Grouse Mt., June 16 to July 3.
insolitus Osburn—Vancouver, April 13.
quinquelimbatus Big—Mt. Cheam, Aug. 6.
diversipes Macq—Renfrew, Vancouver, Mt. Cheam, June 29 to Sept. 10.
protritus O. S.—Glacier, Vancouver, Mt. Cheam, May 4 to Aug. 5.
ribesii Linn—Port Renfrew, Vancouver, Mt. Cheam, Kaslo, Bear Lake, Glacier, April 30 to Aug. 20.
torvus O. S.—Glacier Vancouver, Wellington, Kaslo, Mt. Cheam, Crown Mt., April 2 to Sept. 10.
grossularae Meig (lesueurii) Macq—Victoria, Vancouver, Kaslo, Hope Mts., July 14 to Aug. 25.
americanus Wied—Renfrew, Vancouver, Cheam, Wellington, Kaslo, April 10 to Aug. 18.
opinator O. S.—Port Renfrew, Victoria, Vancouver, Kaslo, Wellington, Field, April 28 to Oct. 22.
genualis Will—Glacier, Kaslo, June 4 to Aug. 20.
sp—Glacier, Aug. 20.

Didea laxa O. S.—Victoria, Vancouver, Hope Mts., Cheam, April 24 to Aug. 14.

Xanthogramma divisa Will—Vernon, Aug. 14.
tenuis Osburn—Hope Mountains, July 27.

Toxomerus (Mesogramma) geminata Say—Renfrew, Goldstream, Victoria, Vancouver, May 6 to Aug. 17.

Mesogramma marginata Say—Port Renfrew, Kaslo, July 7 to Aug. 16.
boscii Macq—Kaslo, June 11.

Sphaerophoria cylindrica Say—Renfrew, Vancouver, Victoria, Vernon, Agassiz, Hope, Field, Glacier, April 28 to Aug. 16.
micrura O. S.—Port Renfrew, Vancouver, May 7 to Aug. 17.
sulphuripes Thom—Glacier, Kaslo, Ainsworth, June 4 to Aug. 7.
melanosa Will—Vancouver, May 30.

Sphegina infuscata Loew—Port Renfrew, Kaslo, Wellington, Vancouver, March 24 to Aug. 23.
lobata Loew—Renfrew, Vancouver, Glacier, June 23 to Aug. 20.

Baccha obscuricornis Loew—Port Renfrew, Vancouver, May 4 to July 6.

Myiolepta bella Will—Port Renfrew, June 30.

Hammerschmidtia ferruginea Fall—Kaslo, June 14 and 15.

Brachyopa notata O. S.—Vancouver, April 13 to 28.

Volucella evecta, form facialis Will—Vancouver, April 23 to May 30.

Sericomyia chalcopyga Loew—Renfrew, Vancouver, Wellington, Kaslo, April 12 to Oct. 3.

Pyritis montigena Hunter—Victoria, Vancouver, Vernon, Feb. 25 to May 2.
kincadii Coq—Vancouver, Vernon, Feb. 14 to May 12.

Arctophila flagrans O. S.—Renfrew, Kaslo, Bear Lake, Glacier, July 29 to Aug. 20.
harveyi Osburn—Mt. Cheam, Hope, July 12 to Aug. 11.

Eristalis tenax Linn—Abundant everywhere the whole season.
latifrons Loew—Victoria, July 17.
montanus Will—Vernon, September.
occidentalis Will—Renfrew, Victoria, Vancouver, Kaslo, April 13 to Aug. 16.
meigenii Wied—Vernon, Aug. 15 to Sept. 9.
flavipes Walk—New Westminster, Vancouver, May 12 to 19.
obscurus Loew—Renfrew, Vancouver, Agassiz, July 18 to Aug. 10.
temporalis Thom (hiritus Loew)—Vancouver, Vernon, Kaslo, Cheam, June 17 to Aug. 31.

Helophilus latifrons Loew—Vernon, Aug. 15.
similis Macq—Kaslo, Vernon, June 3 to Aug. 15.
conostomus Will—Vernon, Aug. 12.
porcus Walk—Kaslo.
pilosus Hunter—
bilinearis Will—Port Renfrew, July 16.

Pterallastes perfidiosus Hunt—

Tridonta curvipes Wied—Victoria, Vernon, July 20 to Aug. 30.

Merodon equestris Fabr.—Vancouver, Victoria, May 6 to June 8.

Syritta pipiens Linn—Renfrew, Victoria, Vancouver, Agassiz, Vernon, Shawnigan, Glacier, April 28 to Aug. 24.

Xylota fraudulosa Loew—Renfrew, Hope, Kaslo, June 15 to July 15.
barbata Loew—Renfrew, Hope, Kaslo, Vancouver, Glacier, June 1 to Aug. 21.
marginalis Will—Duncans, April 19.

Ferdinandea croesus O. S.—Victoria, June 8.

Brachypalpus pulcher Will—Renfrew, Goldstream, Vancouver, Cheam, Hope Mts., April 28 to Sept. 10.
sorosis Will—Kaslo, June 12.
parvus Will—Quamichan Lake, Kaslo.

Pocota grandis Will—Vancouver, Mt. Cheam, Aug. 7 to Oct. 3.

Crioprora alopex O. S.—Victoria, Vancouver, March 24 to April 16.
femorata Will—Wellington, April 15.

Criorhina kincaidii Coq—Vancouver, Kaslo, Wellington, March 25 to July 12.
tricolor Coq—Vancouver, Grouse Mt., Cheam, April 30 to Aug. 11.
nigripes Will—Vancouver, Mission, Kaslo, Wellington, Feb. 25 to May 4.
coquilletti Will—Kaslo, April 30.
armillata O. S.—Vancouver, Kaslo, Bear Lake, April 13 to July 21.
scitula Will—Renfrew, Vancouver, Similkameen, Cheam, Bear Lake, Crown Mtn., June 1 to Aug. 10.
nigra Will—Kaslo, May 29.

Temnostoma aequalis Loew—Kaslo, June 11 to July 17.
alternans Loew—Kaslo, July 23.

Sphecomyia brevicornis O. S.—Kaslo, May 6 to 26.
occidentalis Osburn—Glacier, Vancouver, Grouse Mt., Mission, April 13 to Aug. 21.
nasica Osburn—Hope Mts., July 27.

SOME OF OUR NOCTUIDAE.

By R. V. Harvey.

No. 2—Autographa—continued from last issue.

12. **ampla Walker.** Much larger than the last, which it somewhat resembles, and even more uniform grey in color. Median space below the Y-mark rich brown, well-defined, and extending to the inner margin.
Generally distributed and common.

13. **corrusca Strecker.** A very beautiful species. Ground color a delicate brownish pink, suffused and mottled with olive-green. Outer line much indented, shaded interiorly with olive-green. Y-mark distinct, not silvered, broken; upper part heavily lobed; median space below deep olive-green.
Vancouver Island and Mission.

14. **speciosa Ottolengui.** Described from B. C. Some of our specimens going under this name may be **A. omicron Afz.**
Vancouver Island.

14. **diasema Boisduval.** Much like ampla on a smaller scale, but the hind wings are yellow, showing an affinity with the next genus, Syngrapha.
Glacier.

16. **falcigera Kby,** var. **simplex Grote.** A smallish species with pointed wings. General design like ampla, but there is a decided tinge of pink in the ground color; the median space is red-brown, and the Y-mark is very conspicuous, silvery unbroken and oblique.
Recorded only from Vernon as yet, but it is very common in the East.

OUR LIBRARY.

The Society is indebted to Mr. E. Baynes-Reed of Victoria for the following important additions to our entomological papers and reports.

OFFICIAL REPORTS

Bulletin of the New York State Museum; 3 numbers, 1893, '97, '98.
Report of the New York State Entomologist on injurious insects, 5 vols.: 1891 to 1897.
Reports of Agricultural Experiment Stations:
University of California; 1 vol., 1893.
State of Connecticut; 3 vols., 1901, '04, '05.
State of New Jersey; 9 vols., 1896 to 1905.

SPECIAL ECONOMIC REPORTS.

Insects injurious to Cotton Plant; 11 papers.
Insects injurious to Shade Trees; 8 papers.
Insects injurious to Fruit Trees; 4 papers.
Insects injurious to the Cacao (Manila); 1 paper.
Insects injurious to the Grape Vine; 2 papers.
The Perodical Cicada; 3 papers.
The Hessian Fly; 1 paper.
Gypsy and Browntail Moths; 3 papers.
San Jose Scale; 2 papers.
Chinch Bug; 2 papers.
Grasshoppers; 2 papers.
Miscellaneous; 13 papers.

CLASSIFIED MONOGRAPHS.

Lepidoptera; Butterflies, 1 paper; Noctuidae, 3 papers; Tineidae, 3 papers; Cochlidiidae 1; general 3, including Dr. Dyar's paper on Kootenay.
Arachnida, 3 papers; Acarina 1; Chilopoda 3; Myriapoda-Diplopoda 8; Lithobiidae 1.
Thysanoptera, 1 paper; Odonata 6; Mallophaga 1.
Orthoptera; Acridiidae, 4 papers; Mantidae 1; Phasmidae 1; general 1.
Hemiptera Homoptera; Aleurodidae, 2 papers; Coccidae 2; Fulgoridae 1.
Neuroptera; Sialididae, 1 paper.
Mecoptera; Bittacus, 1 paper.
Diptera; Tabanidae, 1 paper, Tachinidae 1; general 5.
Siphonaptera, 1 paper.
Plecoptera, 1 paper.
Coleoptera; Chrysomelidae, 1 paper; Scolytidae 1; general 5.
Hymenoptera; Chalcididae, 2 papers; Ichneumonidae 1; Galls 1; general 1.

NOTE—Two papers by members of this society are unavoidably held over to the next issue.

BULLETIN

— OF THE —

British Columbia Entomological Society

EDITED BY R. V. HARVEY, M. A. VICTORIA, B. C.

QUARTERLY APRIL, 1908 No. 9

NOTE BY THE EDITOR.

(Continued from last issue)

To any of our local collectors who may be thinking of taking up the study of the Diptera this year I would like to press the claims of this particular family on their attention, for several reasons. First, their abundance, both in species and in individuals, all through the collecting season. Second, the ease with which the family can be distinguished, namely by the false vein referred to by Professor Osburn; a small pocket lens is the only requisite in addition to the ordinary outfit. Third, the offer of Professor Osburn, to whom our best thanks are due, to determine species for any of us who take up the study of this interesting family.

A list of the books which are available to the collector in this branch of entomology may be of use here. They are as follows:

1. The Insect Book. (Howard), pub. by Briggs of Toronto; price $3.75. This contains figures of many of our B. C. flies, and an excellent table for determining the families of Diptera.
2. Manual for the study of Insects. (Comstock), pub. by the Comstock Pub. Co., Ithaca, N. Y. An excellent aid in all orders of insects.
3. Manual of North American Diptera. (Williston), pub. by J. T. Hathaway, New Haven, Conn. Gives good tables of all the genera of Diptera. A new edition, with illustrations, is in preparation.
4. Synopsis of the N. American Syrphidae. (Williston), 1886. Bulletin No. 31 of the U. S. National Museum. Gives full descriptions of all the then known species of American Syrphidae, with 12 plates.
5. Catalogue of North American Diptera. (Aldrich). 1905. Published as No. 1444 by the Smithsonian Institution, Washington, D. C.

SOME NOTES ON SUGARING.

By E. M. Anderson, Provincial Museum, Victoria.

Sugaring to my mind is without doubt the most interesting way of collecting, and the only way for obtaining most of our nocturnal insects. I am positive it will repay the collector, provided he be patient, and not disappointed with a small catch, or not a single specimen for the first night or so.

The liquid I use with best results is as follows:

Coarse brown sugar	1 lb.	Porter (or ale)	1 gill
Treacle	¼ lb.	Rum	1 wine glass full

Mix together the sugar, treacle and beer in a saucepan, bringing the mixture to the boiling point and stirring it meanwhile. Put in corked bottles, and just before applying add the rum. The collector, having provided himself with a wide-mouthed bottle or jar of the aforesaid mixture, a brush to lay it on with, a net, cyanide bottles and a lantern, is equipped for sugaring.

All seasons of the year (except when too great an abundance of flowers is in bloom), yield a certain percentage of moths attracted by the sugar. Warm cloudy nights will be found generally the most favorable; moonlight nights are, as a rule, blank or nearly so.

I have noticed that many nights which appear most favorable will, on the contrary, be unaccountably the most disappointing: not a single moth will make its appearance. The presence of ground fog, more attractive flowers, a coming change of wind or temperature will sometimes account for this. Showers, provided they are accompanied by warm weather are sometimes very favorable, and the catch during these conditions of the atmosphere will generally repay the inconvenience of a wet jacket.

July or August is generally the best time for sugaring, and, if the weather be warm, what is more delightful than to spend a night in the woods?

Just before dusk get your sugar painted on the trees, about four feet from the ground, in long narrow strips, taking care not to allow any to fall at the foot of the tree.

From dusk to about midnight the fun is sometimes fast and furious, hundreds of moths of the common species come and go, with now and then a good thing to sweeten the toil.

One of the most curious things about sugaring is the swarming of one species at a certain hour, and then its replacement by moths of quite a different genus.

Failing trees to put your sugar on, paint walls, fences, flat stones, etc., while pieces of cloth or calico soaked in the liquid may be used to good advantage.

Some very curious things are attracted by sugar; such insects as beetles, woodlice, slugs, etc., are expected as a matter of course, but to my surprise I have seen bats and even frogs feasting on the sweet juice.

Three or four cyanide bottles should be used, about 6 or 8 oz., with as large mouths as possible. To this have a cork sloping outwards above the bottle some little distance to afford a grip. When you see one of the restless hovering kind of insects at your sugar, aim at him stealthily with the mouth of your bottle, and when near enough rapidly close the mouth over him, and with a little care you can manage to get the bottle recorked. Let him remain in the bottle till stupified, meanwhile using another bottle. Many insects sit very quietly at the sugar, but some have a nasty trick of dropping at the least alarm; in such cases the net should be pressed close to the tree to receive them. For such species as Catocala and other wary insects I use the net, as they are very difficult to approach with a bottle.

NOTES AND ADDITIONS TO THE BRITISH COLUMBIAN CHECK LIST OF LEPIDOPTERA.

By F. H. Wolley Dod, Millarville, Alberta.

I have for some time past been collecting notes and fresh records for the B. C. list of Lepidoptera, and think they will perhaps be of some value to B. C. collectors.

To save space I have not included those given in Dr. Fletcher's most valuable Record up to 1906 inclusive. The current issue has not appeared at the time of writing, though some of the following will be referred to in it. All collectors have probably the back numbers, and so can pick out the references for themselves. The same applies to the Bulletin, with a few exceptions. I have, I think in every case, given the references to every additional name since the publication of Dr. Dyar's Catalogue. With the Bulletin records added, the list of Heliophilas will be increased by five, (though I am under the impression that I have seen yet another species in Mr. Harvey's collection, for which I have no name), though two of the names I have bracketed as vague. Orthosia receives a severe knock, four of the five names printed on the list being threatened with dismissal. In these and other instances collectors must discover for themselves whether the reforms mean merely succession or addition; in most cases I suspect the former. Some new records of Mrs. Nicholl will probably be published in the Canadian Entomologist before this by Sir George Hampson. I have some additions in Geometridae, but leave them to be entered by Mr. Taylor.

Where no other reference is given, the records are the writer's own captures.

I. NOTES.

Coenonympha ampelos, Edw. occurs as far east as Windermere, within thirty-five miles of the Alberta boundary. July.

Oeneis beanii, Elwes. Mts. Field and Stephen, Field, B. C., a male on each, July 7th and 8th, more seen. On a mountain top 10 miles east of Windermere, seen but not captured. Probably to be found elsewhere above timber-line in this range. Bean records it from Hector (as subhyalina) in Edw.; Butt.; N. Am.; III., page XV.

Oeneis jutta, Hbn. Emerald Lake (Geddes); Ottertail (Burrison). Both records from Edw: Butt: N. Am.

Pseudohazis shastaensis, Beh. Windermere, July 13th; two taken, a third seen.

Eubaphe immaculata, Reak (Bull 1). This record of Mr. Bush from Revelstoke will not improbably be found to refer to the same form as that taken by the writer at Windermere, and recorded in Dr. Fletcher's Record as **aurantiaca**. A few of the specimens are immaculate or nearly so. I have sent this and Calgary specimens to Dr. Dyar for his opinion.

Neoarctia yarrowi, Stretch. Mt. Stephen; a female, just out, July 7th, about 7500 feet. A male hatched July 29th, from a full-fed larva found basking in hot sunshine on a stone near summit of Mt. Field, July 8th.

Androloma mac-cullochii, Kby. Emerald Lake and Glacier.

Panthea portlandia, Grt. A fine female on the yard-office arc-lamp, Field, July 16th. (I recommend this lamp as a good trap to search, day or night, to anyone passing Field. Moths would sometimes settle on the wires in front soon after it was lighted, and sit for twenty-four hours).

Hadena allecto, Sm. The B. C. record in Dyar's Catalogue is erroneous, and refers to Calgary.

Hadena emissa, Hbn. Windermere, July 9th; one female.

Hadena vultuosa, Grt. This record probably refers to the species described by Dr. Dyar from Victoria as **multicolor.** Allied to Vultuosa, but overspread with dark shadings; reniform contrasting white. This I think applies to the ordinary B. C. form.

Hadena relecima, Morr. Fishea yosemite Grote has now been correctly recorded from Kaslo, and probably refers to the same species.

Hadena maida, Dyar. Glacier, female; Mrs. Nicholl, (Hampson, Cat.; VI. 344).

Hyppa brunneicrista, Sm. I believe this record to be entirely erroneous. The species I saw rather commonly in B. C. collections under this name is the Pacific coast form of **xylinoides** Grt.

Oncocnemis viriditincta, Sm. The species was described from "McLean, B. C." though Assiniboia was meant. The record is therefore erroneous.

Chorizagrotis balanitis, Grt. I saw a specimen in Mr. Cockle's collection, bearing the label Paragrotis fulda, dated Dec. 1st, 1902. It was described from Colorado.

Paragrotis insertans, Sm. Described from Spence's Bridge.

Paragrotis quinta, Sm. Bull 7 (not quinto). Described from Kaslo and High River, Alta. (Annals N. Y. Acad. Science, xviii., p. 92, 1908.)

Paragrotis vallus, Sm. Described from Laggan, Alberta. There is probably no authentic B. C. record.

Paragrotis incubita, Sm. This is referred to by Sir George Hampson as a synonym of **septentrionalis Walk,** which was described from Vancouver Island, and is not the same as **messoria Harr...** Prof. Smith accepts Hampson's synonym.

Paragrotis brunneigera, Grt. Was described from Vancouver Island.

Paragrotis intrita, Morr. Ditto.

Paragrotis infausta, Walk. Ditto.

Paragrotis furtivus, Smith. This species is confused with **idahoensis** and probably occurs in B. C., but the specimen I saw in Mr. Bush's collection bearing Prof. Smith's label furtivus, probably the one so recorded by him in Dr. Fletcher's Record for 1906, is a very ordinary form of **nordica.** Mr. Bush told me that he was not sure he had not taken the specimen from a railway car, though it looked perfectly fresh.

Paragrotis nordica, Sm. Described from "Calgary, Canada; and Olds, B. C." Olds is in Alberta.

Paragrotis strigilis, Grt. Was described from Vancouver Island.

Mamestra larissa, Sm. Field, July 7th.

Mamestra goodellii, Grt. The record for this species probably applies to **acutermina Smith,** described partly from Wellington material. Goodellii I believe is not known from the west.

Mamestra segregata, Sm. Described from Laggan, but recorded from Kaslo.

Mamestra ectrapela, Sm. Described from Colorado and "Agnes Lake, B. C." Agnes Lake (Laggan), is in Alberta, and Dyar's record erroneous. I may here point out, however, that Laggan is very near the boundary, and many of the Laggan species might therefore be reasonably expected in B. C. As a matter Bean was a very careful labeller, and would probably not have put a Laggan label on a B. C. capture.

Scotogramma luteola, Sm. Described from Laggan, "B. C.," in error.

Anarta lapponica, Thunb. Kicking Horse Pass; Mrs. Nicholl, (Hampson Cat. vi., p. 416).

Anarta zetterstedtii, Staud. Lake O'Hara; Mrs. Nicholl, (Hampson, Cat., 417).

Zosteropoda hirtipes, Grt. Windermere, July 12th.

Graphiphora oviduca, Guen. Vancouver Island. (Hampson v., 298.)

Cucullia postera, Guen. Windermere, July 12th.

Rancora solidaginis, Behr. Osoyoos. (Hampson vi., 17.)

Rancora strigata, Sm. The only type comes from Victoria.

Papaipema insulidens, Bird. Described from Vancouver Island.

Pyrrhia exprimens, Walk. Wilver, near Windermere, July 9th.

Eucirrhoedia pampina, Guen. Vernon; Coldstream ranch; Miss Ricardo. Hampson, vi., 494.)

Orthosia purpurea, Grt. The name will probably have to be struck out from the B. C. list, as will be explained under the "Additions."

Orthosia decipiens, Grt. The same applies to this species.

Orthosia bicolorago, Guen, var ferruginoides Guen. The species so commonly standing under this name in B. C. collections is **verberata Sm.** The only doubtful specimen I saw, I brought home and compared with my co-types. Prof. Smith has not ferruginoides in his collection as from B. C., and it probably does not occur there. Verberata is undoubtedly distinct.

Orthosia euroa, G. & R. This name should almost certainly be struck from the list also.

Eustrotia albidula, Guen. Windermere.

Syneda hudsonica, G. & R. Very common at Field, July 2nd-8th; less so near Windermere, July 13th.

Odontosia elegans, Strk. Windermere, July 11th.

Pheosia dimidiata, H. Sch. Field, July 6th and 7th.

Habrosyne scripta, Gosse. Field, July 6th.

Olene plagiata, Hbn. Windermere, July 10th.

II. ADDITIONS.

Synchloe creusa, Db-Hew. Windermere, July 13th; Field, (Mrs. Nicholl, Yoho Valley.)

Eurymus elis, Strk. Hector. Mrs. Nichol.

Eurymus pelidne, Bdv. var skinneri Barnes. Yoho Valley, near Field; Mrs. Nicholl.

Brenthis alberta, Edw. Hector, B. C. (T. C. Bean in Edw. Butt. N. Am. III., Pt. xv.). Mrs. Nicholl records it from Hector also, and from head of Yoho Valley and O'Hara Lake.

Brenthis astartte, Db-Hew. Mrs. Nicholl saw it at Glacier crest, and actually took it at Lake O'Hara, and on the pass from Emerald Lake to the Yoho Valley. Two specimens from the latter localities are in my collection.

Oeneis brucei, Edw. Recorded by Bean from Hector (Edw. Butt. N. Am. III., Pt. xv., under astarte).

Hesperia centaureae, Ramb. Recorded from "B. C." in Holland's book. I took a very fresh specimen on a mountain near Windermere on July 13th.

Cerma cuerva, Barnes. (Can. Ent. xxxix., p. 10); described from Victoria.

Hadena ferens, Sm. (Can. Ent. xxxv., 134); Windermere, July 11 and 12.

Epdemas melanographa, Hamps. (Hamps. Cat. VI., p. 215.) Type from Vancouver Island.

BULLETIN

— OF THE —

British Columbia Entomological Society

EDITED BY R. V. HARVEY, M. A. VICTORIA, B. C.

QUARTERLY JUNE, 1908 No. 10

(Continued from last issue.)

Hyppa indistincta, Sm. Dr. Dyar records this from Kaslo, but I believe him to be wrong in referring brunneicrista Sm. to the synonymy. I have a specimen from Kaslo, and took one at Laggan last July, which agree with the figure and description of indistincta, and are in my opinion distinct from brunneicrista.

Oncocnemis pudorata, Sm. Hope Pass. Mrs. Nicholl; (Hamps. v. 154).

Oncocnemis albifasciata, Hamps. Equals fasciatus Sm. (Hamps. vi., 152). From north-west B. C.

Setagrotis dolens, Sm. (Can. Ent., xxxviii., 226.) One of the types from Arrowhead Lake.

Paragrotis esta, Sm. (ib. 227.) Described from Wellington; allied to **velleripennis.**

Paragrotis cocklei, Sm. (Annals N. Y. Ac. Sc., xviii., 96.) Described from Kaslo, and compared to **insulsa.**

Paragrotis tristicula, Morr. Windermere, July 12th.

Paragrotis nesilens, Sm. (Jour. N. Y. Ent. Soc., xi., 192.) Same place and date; probably a variety of the above.

Mamestra mystica, Sm. Wilmer, near Windermere, July 9th, one specimen.

Mamestra imbrifera, Guen. Wilmer and Windermere, July 9th to 11th.

Polia glaucopis, Hamps. (Cat. iv., 106). Described from two females from Vancouver Island, and associated with cristifera. Most of our North American Mamestras are placed under Polia by Hampson.

Mamestra acutermina, Sm. (Can. Ent., xxxvi., 153.) Wellington is one of the type localities. It probably represents goodellii in the west.

Mamestra dodii, Sm. (Can. Ent., xxxvi., 152.) Dr. Dyar tells me that one of the specimens recorded from Kaslo as **liquida** is this species.

Anarta impingens, Walk. "Southern B. C." (Lord Derby), two males, type. (Hamps., iv., 45.)

Anarta staudingeri, Auriv. First recorded as North American by Hampson from Labrador. Prof. Smith states, (Ann. N. Y. Ac. Sc., xviii., 108), that he has a specimen in his collection labelled "B. C."

Heliophila anteoclara, Sm. After comparison I so named a Kaslo specimen for Mr. Cockle. My material in **farcta,** however, is much too short to give me an idea of the limits of that species. I saw what I took to be **anteoclara** in Mr. Livingstone's collection.

Heliophila rubripallens, Sm. Kaslo, one female (Hamps., v., 596.) The species was described from California, Colorado, and Utah, and the description denotes a red-tinted form of the oxygale group. Oddly enough, my reddest specimens in this group come from the east.

Heliophila multilinea, Walk. I saw what I believe to be this species in Mr. Livingstone's collection.

Graphiphora bastura, Sm. (Ann. N. Y. Ac. Sc., xviii., 103.) Type from Kaslo

Graphiphora saleppa, Sm. Kaslo, one female (Hamps., v., 596.) The species was described from Cal., Sm. (Trans. Am. Ent. Soc., xxxiii., 132.) Described from Wellington and James Bay, Victoria. Five specimens. Prof. Smith tells me he has praeses (with which he associates it) from B. C. as well.

Xylina ancilla, Sm. (Psyche, June, 1904, p. 57.) One of the types was from Wellington. The form is doubtfully distinct from **holocinerea Sm.**

Xylina verteria, Sm. (ibid. p. 58.) Described from Corvallis, Oregon, and "B. C." The description denotes a form closely allied to the preceding.

Homoglaea dives, Sm. (Trans. Am. Ent. Soc., xxxiii., 131.) Described from Corvallis, Oregon, and Wellington, B. C. Associated with **carbonaria Harv.** It remains to be seen whether the latter name will hold its own in the province.

Rancora albicinerea, Sm. Vancouver Island. (Hamps., vi., 18.)

Copicucullia antipoda, Strk. Penticton. Mrs. Nicholl; (Hamps., vi., 10).

Amathes antapica, Sm. (Trans. Am. Ent. Soc., xxxiii., 134.) Prof. Smith writes, "It is an ally of the **crispa** form of **purpurea** . . . I have no doubt whatever of the distinctness of the two species, and . . . I doubt whether the true purpurea or crispa occurs in the Vancouver faunal region." He has the species from Oregon, Washington, and Corfield, Vanc. Island. Sir George Hampson groups most of our Orthosias, including all those now in the B. C. list, under Kuhner's genus Amathes, and Prof. Smith agrees to the arrangement.

Amathes acta, Sm. (ibid., 133.) Described from the same localities, with the addition of Pullman, Wash., and Livingston, Vancouver (?). Allied to decipiens Grt., which Prof. Smith states he has seen from the east only. (Mr. Cockle has already recorded the species, I notice, in Bulletin 7.)

Amathes dusca, Sm. (Ann N. Y. Acad. Sci., xviii., 117.) Described from over forty specimens from various Manitoba localities, and from Kaslo. The name, judging from Prof. Smith's remarks, will probably have to replace euroa. The species is described as dusca, but **duscata** is written repeatedly in a subsequent paper.

Ipimorpha nanaimo, Barnes. (Can. Ent., xxxvii., 196.) Type from Victoria. "Paler and yellower than pleonectusa, the markings showing dark against a pale ground, while in the old species the reverse is the case." I saw it standing in several coast collections as pleonectusa, which occurs there also.

Drasteria conspicua, Sm. I saw what I took to be this species in Mr. Skinner's collection from Similkameen.

Philometra gaosalis, Walk. Windermere, July 10th-13th. Fairly common.

IMPORTATION OF ENTOMOLOGICAL BOOKS

The following memorandum re admission of entomological books duty-free will be of interest to collectors.

(Copy) CUSTOMS DEPARTMENT, CANADA,

Ottawa, 13th February, 1899.

To Collector of Customs:—

The following memorandum was issued on the 28th July, 1898, to Customs Ports concerned in the importation of entomological books, viz.:

"I beg to advise you that the Minister of Customs has determined that books on entomology, such for example as "Insects Injurious to Vegetation," by Dr. T. M. Harris; "Guide to the Study of Insects," by Dr. A. S. Packard; "Insects Injurious to Fruits," by Dr. Wm. Saunders; "Manual for the Study of Insects," by Prof. J. H. Comstock; "Economic Entomology," by Prof. J. B. Smith; and "Entomology for Beginners," by Dr. A. S. Packard, are entitled to free admission under the provisions of item 464 of the Tariff Act."

You are instructed that free importation of books of the above class is not confined to the special works herein described by name, but that entomological works may be classed as Industrial Books entitled to free entry under Tariff item No. 464.

(Signed) JOHN McDOUGALD,
Commissioner of Customs.

A COLLECTING TRIP THROUGH THE CASCADE MOUNTAINS

By R. V. Harvey and R. S. Sherman

Part II.

In No. 3 of this Bulletin we gave a brief description of this trip, with some accounts of the butterflies met with. As regards the moths, it must be admitted that a camping trip of this nature is not likely to produce a large variety of nocturnal insects. By the time that the catch of the day is sorted and pinned and papered, and the notes written out by the light of a candle, there is not much energy left for lantern-work. Geometers, of course, were taken in some numbers, and included a few very interesting species. I append a list of species taken, with numbers according to Dyar's List.

764. **Pseudohazis eglanterina Bdv.** Seven specimens; very local; only on the Samallow Summit, July 16th.

862. **Diacrisia virginica Fabr.** One, in the Nicolum Valley, July 14th.

872. **Hyphoraia parthenos Harr.** Detached wings only, in Nicolum Valley and on Whipsaw Creek. This species has not been recorded from the coast.

900. **Parasemia plantaginis Linn.** One, on Skaist Summitt (1,800 feet), July 19th. A purely alpine species in this Province; recorded from Mt. Cheam (7,000 ft.)

922. **Halisidota maculata Harr.** Two, Nicolum Valley, July 11th and 13th.

943. **Androloma mac-cullochii Kby.** Two on Skaist Creek, July 18th-19th.

952. **Alypia langtonii Coup.** Common in the Nicolum Valley.

958. **Panthea portlandia Grote.** One, July 10th, Nicolum.

1278. **Hyppa xylinoides Guen.** Quite common at light, from Nicolum up Skaist Creek.

1415. **Adelphagrotis prasina Fabr.** One, July 11th, Nicolum.

Graphiphora communis. Several, Samallow and Skaist, July 16th-17th.

Orthosia sp. A beautifully marked species, pinkish with a blue stigma. Fairly common at light up the Skaist Creek.

2492b. **Autographa californica Spey.** Skagit River, July 17th.

2492a. **Autographa pseudogamma Grote.** One, Similkameen, July 22.

2502. **Autographa octoscripta Grote.** One, Skagit River, July 17th.

2505. **Autographa rectangula Kby.** One, July 16th, Samallow Valley.

2781. **Syneda graphica Hubn.** One on the Skaist, July 17th. (A new record for B. C.)

2799. **Syneda hudsonica G. & R.** Several along the Skaist Creek, July 17th.

3049. **Bleptina caradrinalis Guen.** Nicolum, July 11th.

3081. **Hypena californica Behr.** Skaist Summit, July 17th.

3173. **Habrosyne scripta Gosse.** Two; Nicolum and Samallow, July 11th and 22nd.

3216. **Malacosoma pluvialis Dyar.** Two; Nicolum and Skagit, July 15th and 25th.

3230. **Drepana siculifer Pack.** One, Nicolum, July 13th.

Of the forty-one species of Geometridae taken on this expedition, very few were of any particular rarity or interest from the point of view of distribution, and these have been already noted from time to time in our lists of Additions.

THE SEVENTH ANNUAL MEETING.

This meeting was held at Duncan's on Thursday, April 16th, at the residence of Mr. G. O. Day, Quamichan Lake. President: Rev. G. W. Taylor and Messrs. G. O. Day, A. W. Hanham, E. M. Skinner and R. V. Harvey.

The minutes of the last meeting and the treasurer's accounts having been passed, the following were elected as new members: Miss I. Abercrombie and Miss van Steenweyk, of Vanconver; Messrs. P. Luscombe, Cowichan Bay, and B. R. Elliott, South Gabriola Island.

Proposed by Mr. Day, seconded by Mr. Hanham, and carried unanimously, that the retiring officers be re-elected for the year 1908, as follows:

President, Rev. G. W. Taylor, Departure Bay.

Vice-President, A. H. Bush, Esq., Vancouver.

Secretary-Treasurer, R. V. Harvey, Victoria.

The Chairman said that on the present occasion we greatly missed the presence of a gentleman who had always taken a keen interest in the Society—he referred to the late Mr. Clermont Livingston—and he felt that he was only voicing the general feeling

of the members by expressing their great regret at their loss, and by proposing a vote of condolence with Mrs. Livingston and the family. This motion was carried unanimously, and Mr. G. O. Day was requested to convey the same to Mrs. Livingston.

The Chairman gave a most interesting account of the recently established Dominion Biological Station at Departure Bay.

Mr. Day gave an account fo the species of moths taken by him at the sallows this spring, which included six pieces of Xylomiges, and five of Xylina, among which was a fine series of the rare and handsome **X. baileyi.** Among the geometers were **Jubarella danbyi, Eupithecia nevadata** (rare), and the recently described **Hydriomena manzanita.** Mr. Day also informed the members that the red form of **Graphiphora praeses** had been found to breed quite true to type, and that he was pursuing this investigation by testing it to the second generation.

The meeting then adjourned.

FOOD PLANTS OF BRITISH COLUMBIAN LEPIDOPTERA.

Commencing with this issue, we propose to publish every quarter such information as we can gather as to the food plants of our lepidoptera. The work is, perhaps, rather ambitious, considering the present state of our knowledge, but we think that by making a beginning, however small, we shall encourage those who have the knowledge to give us the benefit of it. If each member who has ever done any breeding or observation of larvae would put down the names of the food plants opposite these of butterflies or moths in our printed list, this could be sent in to the Editor from time to time. Extra copies of the Lepidoptera list will be sent post-free on application for this purpose.

The name of the food plant will, in each case, be followed by the initials of the member contributing the record.

FIRST LIST BUTTERFLIES.

Parnassius smintheus Bb-Hew.....Stonecrop (J. C.)
Papilio eurymedon Bdv.....Ceanothus (J. C.), Hawthorn (E. A.)
rutulus-arizonensis Edw. .....Willow, poplar, apple (J. C.)
Neophasia menapia Feld .....Pine (J. C.), fir.
Pontia napi-venosa Scud.....Cabbage (E. A.)
rapae Linn .....Cabbage, turnip, etc. (E. A.)
Synchloe sara-reakirtii Edw.....Arabis (R. V. H.)
Eurymus eurytheme-eriphyle Edw.....Clover (J. C.)
occidentalis Scud .....Clover (E. A.)
interior Scud .....In fir woods only (J. C.)
Brenthis myrina Cram.....Violets (E. A.)
Lemonias taylori Edw. .....Valerianella (G. W. T.) Camassia (E. A.)
Phyciodes pratensis Behr.....Wild Aster (J. C.)
Polygonia satyrus Edw.....Nettle (J. C.), hop (R. V. H.), poplar (E. A.)
faunus Edw. .....Willow (J. C.)
zephyrus Edw. .....Rhododendron, currant (J. C.)
silenus Edw. .....Alder (E. A.)
Eugonia californica Bdv.....Ceanothus (J. C.)
Euvanessa antiopa Linn.....Willow (J. C.), elm, (V. H.), poplar (E. A.)
Aglais milberti Godt.....Nettle (J. C.)
Vanessa atlanta Linn.....Nettle (J. C.)
huntera Fab .....Nettle? (E. A.)
cardui Linn .....Thistle (J. C.)
carye Hub .....Hollyhock (J. C.)
Basilarchia lorquinii Bdv.....Cottonwood, apple (J. C.), willow (E. A.)
archippus Bdv .....Poplar, willow (E. A.)
Oeneis gigas Butl.....Lichen (E. A.)
Anosia plexippus L. .....Milkweed.
Thecla californica Edw.....Willow (E. A.)
nelsonii Bdv .....Strawberry? (J. C.)
Thanaos icelus Lint.....Willow? (J. C.)

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